Evaluation of the screening and brief intervention for risky alcohol use in Sibasa primary health care clinic in Thulamela Municipality: A randomized controlled trial.

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DECLARATION

I, Mpho Ramarumo, hereby declare that the thesis for the Doctorate of Philosophy degree in Psychology at the University of Venda, hereby submitted by me, has not previously been submitted for a degree at this or any other institution, and that it is my own work in design and execution, and that all reference material contained therein has been duly acknowledged.

Signature

23/4/2014

Date

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DEDICATION

I dedicate this study to my dear family who have been there for me and supported me throughout;

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ABSTRACT

Background

The use of alcohol as a drug is common in many societies, and has a history stretching back for millennia (Rodseth, 2012). There is a well-developed culture surrounding the production and consumption of alcoholic beverages, as they form part of celebrations, meals and religious rituals and frequently form the hub of social interaction (Rodseth, 2012). In a review of the data from national surveys carried out in South Africa, Peltzer and Ramlagan (2009) found that binge drinking was between 7% and 11% and risky drinking, 6.9%. South Africa appears to have one of the highest levels of alcohol consumption per drinker in the world. Up to a third of drinkers in this country drink at risky levels over weekends, and it is common for them to drink to intoxication (Peltzer & Ramlagan, 2009). Thirty to fifty percent of people, who drank in 2008, experienced at least one alcohol-related problem, such as missing work or having interpersonal problems (Schukit, 2009).

Disorders related to alcohol use are responsible for a large proportion of the health-care burden in many countries. Alcohol affects almost every organ in the body (Schukit, 2009). Alcohol-related traumatic injuries, as a result of violence and motor vehicle accidents are common in South Africa. The levels of Foetal Alcohol Syndrome are the highest ever recorded (Peltzer & Ramlagan, 2009). Studies show very strong links between drinking and the engagement in risky sexual behaviours, increasing the risk of HIV infections (Peltzer & Ramlagan, 2009). Risky alcohol use is a problem as it creates many negative consequences for both the drinker and the people near to him/her. There is a need for an effective method to help those who are risky drinkers to reduce their drinking.

The use of brief intervention can be very effective in helping the patients reduce or discontinue alcohol abuse (Rodseth, 2012). The brief intervention protocol includes four components, namely: ask about alcohol use, assess using the Alcohol Use Disorder Identification Test (AUDIT), advise using the brief intervention protocol, and assist. Intervention includes direct feedback about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (Saunders, Aasland, Amundsen & Grant, 1993).

Objectives

- To pre-test the use of alcohol with the aid of the Alcohol Use Disorder Identification Test;
- To implement the screening and brief intervention; and
- To implement a post-test to ascertain the use of alcohol 6 months after the intervention.

Data collection and analysis

A sample of 140 participants who consulted the Sibasa clinic was selected using the AUDIT questionnaire, and then randomly sampled to be either part of a control or experimental group. Each group consisted of 70 participants. After selection, the control group was provided with only an information leaflet on how to cut down alcohol. The experimental group was provided with individual counselling. Depending on their drinking behaviour, the counselling the experimental group received ranged from simple advice, alcohol education and brief counselling. Six months after the first AUDIT, both groups were reassessed to ascertain if there had been any change in drinking behaviour.

Main results

The baseline data was compared with the post test data using ANOVA and the results showed a significant reduction of the AUDIT score in both experimental ($t=15.47$; $P<0.001$) and control ($t=11.28$; $P<0.001$) groups. However, the intervention group had a higher reduction in alcohol consumption than the control group. Using ANOVA, showed that there was, overall, no significant intervention effect between experimental and control conditions at the 6 months follow-up.

Author's conclusions

Overall, brief intervention was effective in reducing the consumption of alcohol. There was improvement on the alcohol consumption of the control group. The sample was small, hence there is a need for future researchers to continue the research using bigger samples.

ACRONYMS

AUDIT	Alcohol Use Disorder Identification Test
BACs	Breath Alcohol Concentration
DALY	Disability Adjusted Life Years Lost
FBDG	Food-based Dietary Guidelines
HIV/AIDS	Human Immunodeficiency Virus/
MRC	Medical Research Council
NIAAA	National Institute on Alcohol Abuse and Alcoholism
PHC	Primary Health Care
RCT	Randomized Control Trial
SADHS	South African Demographic and Health Survey
SBI	Screening and Brief Intervention
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1. INTRODUCTION

The use of alcohol as well as the problems arising from its misuse is of widespread concern. The major impact of the misuse of alcohol is on the lives of both drinkers and the non-drinkers. These problems range from financial, legal and social problems to health problems that include the spread of sexually transmitted infections such as HIV/AIDS. The use of alcohol and other substances is also associated with the high rate of gender-based violence in South Africa (WHO, 2005).

Attempts to make people aware of the impact of alcohol misuse before complications develop owing to alcohol addiction have been made in various places. Awareness campaigns about alcohol use and misuse have been conducted to reduce the use of alcohol. However, the rate of alcohol misuse is still rising. There is a need for some form of intervention that will address the issue of alcohol use and misuse in the primary care setting where people can be reached before problems develop.

This study evaluated the effectiveness of screening and brief intervention to prevent alcohol misuse in the primary health care setting. The study used a randomized control trial or an experimental research design with patients who consulted primary health care centres for any ailments as research subjects. Participants included in the study were chosen through the use of random sampling. They were then divided into two groups, namely, the experimental group and the control group. Both groups were assessed before the intervention and after the intervention. The experimental group also received intervention before taking the second assessment. The results of both groups were compared and analysed using statistical package for social sciences (SPSS) as a way of evaluating the effectiveness of the brief intervention.

This chapter presents the following:

The background of the study, and the statement of the problem;

The aims and objectives of the study;

The significance of the study;

The proposed hypotheses;

Definitions of concepts;

Delimitations of the study;

Organization of the dissertation;

Conclusion.

1.2. PROBLEM STATEMENT

Alcohol consumption has been part of human history since time immemorial. There are numerous biblical examples and ancient myths that refer to alcohol. Local history and archaeological findings also suggest that consumption of alcohol has always been part of African culture, rituals, traditions and customs. However, the fact that people still continue drinking alcohol and pass down this habit through generations does not adequately explain why alcohol is consumed. Moreover, patterns of alcohol use have changed significantly over time and evidence suggests that the quantity consumed now is far greater than in earlier times (Gumede, 1995; Parry & Bennets, 1998). The World Health Organization (WHO) estimates that around two billion people world-wide consume alcohol (WHO, 2004). There is clearly no single reason why they do so or why different people drink to different extents. It is apparent that drinking is influenced by factors such as genetics, social environment, age, culture, gender, personality, accessibility and exposure (Parry & Bennets, 1998).

The consumption of alcohol is associated with many problems, not only for the person who drinks, but for other people who might be directly or indirectly affected by the drinking behaviour. Alcohol consumption is associated with many health-related problems and has been implicated in many violence-related injuries and deaths around the world.

In South Africa statistics have shown that alcohol has been associated with many diseases, injuries and high mortality rates. The mortuary statistics of 2002 given by the Medical Research Council (MRC) indicated that in Cape Town, Durban, Gauteng and Port Elizabeth, 45% of all non-natural deaths had Blood Alcohol Concentrations (BACs) greater than or equal to 0.05g/100ml; specifically Durban had 37%, Gauteng 40%, Cape Town 53% and Port Elizabeth 61%. Levels of alcohol were particularly high for transport-related deaths and homicides with 63% of transport-related deaths and 69% of homicides reported in Port Elizabeth, as having levels above the legal limit for driving (0.05g/100ml) (Plüddemann, Parry, Donson & Sukhai, 2004).

The MRC 2001 statistics from trauma units indicate that in Cape Town, Durban and Port Elizabeth, 39% of trauma patients had breath alcohol concentrations (BrACs) greater or equal to 0.05g/100ml; Durban had 22%, Gauteng 36%, and Port Elizabeth 57%). Levels of alcohol were particularly high with regard to transport and violence injuries with, for example, 73% of patients with violence-related injuries in Port Elizabeth and 46% patients with transport-related injuries in Cape Town having high alcohol levels above the legal limit for driving (Plüddemann, *et al.*, 2004).

The 2003 MRC statistic for the demand of specialist treatment services indicate that of 5886 people treated at 52 specialist substance abuse treatment centres in Cape Town, Durban, Mpumalanga and Port Elizabeth in the first half of the year, 52% reported having alcohol as their primary drug of abuse, with a further 13% having alcohol as their secondary drug of abuse (Myers & Parry, 2005).

Foetal Alcohol Syndrome (FAS) statistics of research conducted in Western Cape (Wellington) indicate that the prevalence of Foetal Alcohol Syndrome among Grade 1 learners was 46 per 1000 in 1997 and 75 per 1000 in 1999 (Croxford & Viljoen, 1999). Similar research conducted in Gauteng and De Aar in 2001 and in Upington in 2003 found FAS prevalence rates of 19, 103, 75 (estimates) per 1000 respectively.

A study conducted by the MRC in Atteridgeville in 2003 on alcohol and risky sex statistics among people aged between 25 and 44 found a significant positive association between various measures of alcohol use, previous month's use, frequency, problems and having multiple sexual partners or sexual relations that were regretted in the three months before the study (Morojele, Kachiengá, Nkoko, Moshia, Mokoko, Parry, Nkowane & Saxena, 2004). For example, the correlation between the quantity of alcohol consumed and the number of sexual partners (over a lifetime) was 0.436.

In 2000 a report by MRC on the statistics of alcohol and family violence, indicates that in Cape Town, Durban and Johannesburg between one-third and half of charged offences categorized as family violence, reported that perpetrators were under the influence of alcohol at the time of the alleged offence (Parry, Plüddemann, Louw & Leggett, 2004). Other reports indicate that academic failure and absenteeism were also significantly associated with alcohol consumption (Peltzer, Cherian & Cherian, 1999a).

This gives a picture of alcohol consumption in South Africa.

Many people are ignorant of the facts regarding the impact and effects of drinking alcohol; they do not know the dangers associated with drinking alcohol. The question arises: What needs to be done to reduce this problem?

This study sought to evaluate the effectiveness of Screening and Brief Intervention (SBI) in the primary care setting as an area where problems associated with the use of alcohol can be addressed.

1.3. AIMS AND OBJECTIVES OF THE STUDY

The main aim of the study was to evaluate the effectiveness of screening and brief intervention in the primary health care setting in reducing the use of alcohol.

Specifically, the following were the objectives of the study:

- To pre-test the use of alcohol using the Alcohol Use Disorder Identification Test;
- To implement screening and brief intervention;
- To post-test the use of alcohol six months after the intervention.

1.4. SIGNIFICANCE OF THE STUDY

It is the intention of this study to show the strength of screening and brief intervention for risky alcohol consumption.

The findings of this study are also useful for training of health care providers on how to screen and intervene for risky alcohol use.

1.5. HYPOTHESES

For this study, the following hypotheses were formulated:

a) If patients are screened for their alcohol use and subjected to an intervention strategy, they will change their drinking behaviour.
b) If patients are screened for their alcohol use and receive only an information leaflet on how to cut down on their drinking, they will not change their drinking behaviour.

1.6. DEFINITION OF CONCEPTS

Alcohol misuse: The over-use or incorrect use of beverages containing alcohol or ethanol

Evaluation: A strategy used to determine the worth or value of an intervention

Screening: A method used to assess the presence and the extent of the symptoms of a problem

Brief intervention: An action used for a limited time to assist in the elimination of the existing symptoms of a problem.

DELIMITATIONS

The study included only patients who presented themselves for treatment of any ailments in the clinics in the Sibasa local area in Vhembe District Municipality.

1.7. ORGANIZATION OF THE DISSERTATION

Chapter 1 provides an introduction to the study.

Chapter 2 presents a literature review about the nature of alcohol misuse.

Chapter 3 sets out the research methodology used to conduct the study.

Chapter 4 presents the findings of the study.

Chapter 5 presents a discussion of the findings of the study.

Chapter 6 summarizes the findings of the study, draws conclusions from the findings and presents recommendations based on the conclusions.

1.8. CONCLUSION

This chapter presented the background of the problem, the problem statement and the hypotheses regarding alcohol screening and brief intervention. It outlined the main aim, the objectives and the significance of the study. Significant concepts were defined and the study was delimited.

The chapter that follows reviews the literature on the nature of alcohol use.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, literature related to the study is reviewed. The chapter is divided into sub themes that include: alcohol use in South Africa, theoretical perspectives, categories of alcohol drinkers and the causes of alcohol use. It also reviews previous studies about the screening and intervention with regard to alcohol consumption.

2.2. PREVALENCE OF ALCOHOL USE IN SOUTH AFRICA

A report by the Medical Research Council in South Africa indicates that in 1997, just under half men (45%) and one-fifth of women (17%) 15 years and older in South Africa reported that they consumed alcohol. Rates of drinking differed substantially by population group and gender, with the highest levels of alcohol reported by white males (71%), followed by white females (51%), and Coloured males (45%). The lowest rates were reported by African and Asian females (12% and 9% respectively). For both men and women, higher rates of drinking were recorded in urban areas. For males the highest drinking levels (50% or more) were reported in the Free State and Gauteng and the lowest levels (28%). were reported in the Northern Province. For females, the lowest levels were also recorded in the Northern Province (9%), with the highest levels in the Free State, Western Cape and Northern Cape (23%-25%). For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year age groups (MRC, 1998; Flisher, Parry, Evans, Muller & Lombard, 2003).

These figures are likely to be inaccurate given the nature of broad household surveys, where respondents may be dishonest about behaviours that may be stigmatized or disapproved of in certain communities and where inadequate attention may be given to setting respondents at ease when they are asked sensitive questions (Gfroerer, Wright & Kopstein, 1997). Female drinking, in particular, is often disapproved of in many African communities and, as a result, is likely to be under-reported (Mphi, 1994; Siegfried, Parry, Morojele & Wason, 2001).

Pengpid, Peltzer and Van der Heever (2011) assessed the prevalence of alcohol use and associated factors among outpatients in an urban hospital in South Africa, and their study found that 41.2% of the men and 18.3% of the women were hazardous drinkers. In a sample of 1,532 selected patients, 3.6% of the men and 1.4% of the women met the criteria for probable alcohol dependence or harmful drinking. Globally, the prevalence of alcohol use is estimated to range from 4% to 29% for hazardous drinking and from less than 1% to 10% for harmful drinking (Reid, Feilin & O'Connor, 1999). Similar prevalence rates of hazardous or harmful alcohol use in health care settings have been reported from various African countries (Saunders, Aasland, Amusend & Grant, 1993; Chinyadza, Moyo, Katsumbe, Chisvo, Mahari, Cock & Mbengeranwa, 1993; Abiodun, 1996; Bekker & Van Vekden, 2003; Peltzer, 2006; Ward, Mertens, Flisher, Bresick, Sterling, Little & Weisner, 2008).

2.3. PREVALENCE OF ALCOHOL CONSUMPTION INTERNATIONALLY

Previous research in Australia found that 10% of people drank at levels considered to be harmful for long-term health, 7% at 'risky' levels, and 3% at 'high risk' levels. Twenty per cent of the people put themselves at risk of alcohol-related harm in the short term. Seventeen-and-a-half per cent of people had not consumed alcohol in the previous 12 months (Laslett, Room, Ferris, Wilkinson, Livingston & Mugavin, 2011).

In the USA the prevalence of alcohol use by adults over 18 years of age who were regular drinkers was found to be 50.9%. Among those who were infrequent drinkers and 18 years and above, the prevalence was 13.6% (National Health Interview Survey, 2012).

2.4. ALCOHOL USE GLOBALLY

According to the World Health Organization (2002), in 2000, the global burden of alcohol use in terms of death and disability was between 1.6% (for high-mortality developing countries) and 9.2% (for developed regions) of total Disability Adjusted Life Years lost (DALYs), accounting for 4.5 billion years lost. While South Africa is a high-mortality developing country, it has

recently been calculated that alcohol-related harm accounted for 7.1% of all deaths and 7.0% of Disability Adjusted Life Years Lost (DALYs) in 2000, resulting in 1.1 million life years lost in that year (Schneider, Norman, Parry, Plüddemann & Bradshaw, 2007). Alcohol was the third largest contributor to death and disability after unsafe sex/sexually transmitted infections and interpersonal violence. The three largest contributors to the burden specifically related to alcohol, included homicide and violence (40% of alcohol's burden), alcohol use disorder (15%) and road traffic injuries (15%).

It has been estimated that South African adult per capita alcohol consumption in 2005 was between 10.3 and 12.4 litres of pure alcohol. Of this consumption, 2.5 litres per person was homebrewed and illegally produced alcohol (Rehm, Room, Monteiro, Gmel, Graham, Rehn, Sempos, Frick & Jernigan, 2004). According to the World Health Organization (2002), 45% of men and 70% of women in Afro Region E (which includes countries like Ethiopia and South Africa) abstain from drinking alcohol. Therefore, while the consumption per adult is only 7.1 litres of pure alcohol in this region, consumption per adult is 16.7 litres per year (Rehm, Rehn, Room, Monterio, Gmel, Jernigan & Frick, 2003). It has been estimated that per capita consumption among drinkers in South Africa is likely to be even higher than the regional average (Parry, 2005). This gives South Africa one of the highest levels of alcohol consumption per drinker anywhere in the world, putting it at a similar level as countries such as the UK and the Ukraine (Rehm, *et al*., 2003).

Rehm, *et al*., (2003) indicate that the increased consumption of alcohol or heavy drinking is an important risk factor for many health problems and is thus a major contributor to the global burden of disease. According to the 2009 WHO report, the detrimental impact of alcohol was the third on the burden of disease and injury after unsafe sex and childhood underweight status. It exceeded that of many classic risk factors such as unsafe water and sanitation, hypertension, high cholesterol or the use of tobacco (WHO, 2009). Alcohol consumption has been identified as an important risk factor for illness, disability and mortality (Rehm, *et al*., 2004). In 1996, it was reported that in Australia excessive alcohol was responsible for 4.9% of the burden of disease.

Rehm, *et al*., (2003) has argued that alcohol consumption can be a direct cause or a partial cause of the following conditions and incidents:

- Cirrhosis of the liver;
- Infectious diseases;
- Diabetes;
- Pancreatitis;
- Unintentional and intentional injuries;
- Breast, oral, liver and colorectal cancers;
- Stroke, inflammatory heart disease and hypertension;
- Road traffic accidents;
- Memory lapse;
- Falling, suicide, and drowning.

2.5. ALCOHOL USE IN SOUTH AFRICA

The guidelines provided by the Food-based Dietary Guidelines (FBDGs) in South Africa include references to alcohol. The FBDG on alcohol intends to make a contribution towards encouraging those members of the South African population who misuse alcohol, particularly by binge drinking, to partake of low-risk drinking or sensible drinking. Low-risk drinking is defined (using Australian guidelines) as no more than four units of alcohol per day for men and no more than two units for women, with at least two alcohol-free days per week (Van Heerden & Parry, 2001).

South Africans consume well over 5 billion litres of alcoholic beverages per year. The figure could be nearer to 6 billion litres, depending on the estimate of the amount of sorghum beer consumed. Roughly two thirds of the total alcohol consumed in South Africa is malt or sorghum beer. In terms of alcoholic beverages this translates to roughly 4.2 billion litres or roughly 90%

of the alcoholic beverages consumed. Roughly 15% of the total alcohol consumed is wine (Myers & Parry, 2002).

Per capita consumption of alcohol in South Africa is between nine and ten litres per year, which places the country among the higher alcohol consuming nations. Since 1993 the level of per capita adult alcohol consumption appears to have been rising, after a decrease in 1990 and 1991 (Myers & Parry, 2002).

Based on the findings of the Department of Health's South African Demographic and Health Survey (SADHS) conducted in 1998 by the Medical Research Council (1998), just under half of men (45%) and one-fifth of women (17%), 15 years and older, reported that they consumed alcohol. For both sexes, the rate was 28%, which translates to 8.3 million South Africans who were 15 years or older. For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year group.

Risky drinking was defined as drinking five or more standard drinks per day for men and three or more drinks per day for women. While communal drinking is often also risky, respondents who reported communal drinking in the Medical Research Council (MRC) study were not classified as 'risky drinkers'. Rates of risky drinking for males and females were very similar and were roughly 4-5 times greater during weekends than on weekdays, with one-third of current drinkers drinking at risky levels over weekends. For both males and females, risky drinking at weekends appears to be highest among persons in the middle categories for ages 35-44 years for males and 45-54 years for females. Seven per cent of pregnant women acknowledged current drinking (MRC, 1998).

2.6. THEORETICAL PERSPECTIVES ON DRINKING PROBLEMS

There are many theories that can be used to explain behaviour related to alcohol consumption. Some of those theories are based on the psychological explanations of drinking behaviour while others are more medically based. For the purpose of this study, only three psychology based theories will be discussed in this section as the conceptualization of this study.

2.6.1. Social learning theory

The social learning theory is based on the idea that people behave the way they do largely because they have learned to behave in that way. According to the social learning theory, learning can take place on a number of levels with conditioning at one extreme and abstract thought and reflection at the other (Heather & Robertson, 1997). Classical conditioning as a way of learning happens this way: an unconditional stimulus produces an unconditioned response, and then a neutral stimulus is presented shortly before the unconditioned response. After this has happened several times, the neutral stimulus comes to have an effect similar to the unconditioned stimulus; it produces a similar response.

Conditioning plays an important part in behaviour (Heather & Robertson, 1997). Research shows that learning has a great effect on the development of harmful drinking behaviour. People learn how to drink, what to expect from drinking and to use drinking for certain purposes. People who have experienced rules about appropriate drinking learn those rules and rituals (although they may not always use what they have learned). Those who see mostly uncontrolled drinking with the intention of intoxication learn to drink that way (Heather & Robertson, 1997).

In instrumental learning, learning is strengthened each time a response is followed by satisfying consequences. Acts that are reinforced tend to be repeated. People are also shaped by the consequences of drinking. Human beings continue to behave in certain ways if they get positive consequences for the behaviour. If a person's social group drinks heavily and that person receives positive feedback from friends for drinking the same way, he or she will be more likely

to continue the pattern. If a person gets other rewards from drinking, for example, being more social or being less anxious he or she may also learn to use alcohol as a way of getting that reward and as a way of coping with uncomfortable and painful feelings. These positive consequences may be more emotionally powerful than negative ones like hangovers or family problems (Coon & Mitterer, 2012).

Modelling, as a way of learning, happens through observing the behaviour of others. In terms of alcohol consumption parents serve as models of behaviour for their offspring. Children imitate the patterns of behaviour set by their parents, whether it is abstinence, moderate drinking or heavy drinking (Herd, 1994; Windle, 2000). Parents are the agents by whom adolescents learn appropriate or inappropriate norms and values related to alcohol use (Herd, 1994). This theoretical construct has particular significance for explaining patterns of initiation into alcohol use, where the parent often serves as the first model of drinking behaviour. Often, an individual's first experience with alcohol occurs in the family setting, providing parents with the opportunity to moderate the child's interpretation of the meaning of alcohol use (Anderson, Bruijn, Angus, Gordon & Hastings, 2009). In addition, Tyler (2008) found that patterns of excessive alcohol use in parents influence children to a greater extent earlier in adolescence, before the influence of peers grows; first experiences with alcohol and initiation into its use are related to models of parental use acquired through social learning.

2.6.2. Psychosocial theories

All experts, including those who believe in the disease model, agree that psychological, social and environmental events are important elements in the development of problem drinking patterns (Heather & Robertson, 1997).

Habit is a learned element of drinking. People learn to use alcohol in certain situations, including developing the habit of drinking heavily. In the North, for example, people may learn the habit of drinking heavily each time they go to the bar, whereas they might not drink at all otherwise. Habit can be hard to change because it is a routine that people have developed without really thinking about it, a way of behaving that has become an automatic reaction. There is much

research that shows that if a person expects to be affected by alcohol in a certain way, she/he will in fact experience that effect (Heather & Robertson, 1997).

There have been experiments showing that even if people are drinking non-alcoholic drinks they can feel intoxicated (that is, they behave as if they are intoxicated and believe that they are intoxicated), if they believe that they are drinking alcohol. The behaviour that people expect alcohol to produce will consequently be the way they will behave. However, most people do not consciously realise that their beliefs influence their behaviour. Also, if people believe and expect that intoxication is a normal part of drinking, they may well drink to intoxication. If they believe they have no control over alcohol once they have a drink, they may well drink in an uncontrolled way. If people expect alcohol to lead to aggression, they may well act aggressively. Many studies show that alcohol-related violence is a learned behaviour, not a universal and automatic result of heavy drinking (Heather, 1995).

Alcohol may, however, make people less able to control anger and aggression. Cultures/societies develop attitudes, beliefs, expectations of effects and standards about alcohol use, as well as ways of discouraging unacceptable use (Graham, Leonard, Room, Wild, Pihl, Bois & Single, 1998). Penalties can be legal such as making drunk driving a criminal offence. They can also be less structured, but highly effective negative consequences like social shunning and gossip. The greatest problems seem to arise when a society tolerates heavy drinking and drunkenness rather than having strong clear rules about acceptable and unacceptable drinking behaviour and meaningful punishments (Parry, *et al.*, 2004).

Subcultures are smaller groups within the main society, for example, teenagers, friendship groups, or church members. Subcultures can also develop their own attitudes, rules, and expectations about drinking. For example, heavy binge drinking is often seen as normal and acceptable by college students. However, people who belong to religious groups that have strict rules against alcohol do not accept drinking at all (Parry, *et al.*, 2004).

Some people with certain personality characteristics and in certain environmental circumstances may be at greater risk of developing alcohol problems. For example:

• Certain mental disorders (e.g., anxiety, depression) may be more likely to lead to harmful alcohol use;

• People who have antisocial personalities (that is, they are aggressive, do not follow the rules of society, do not take responsibility for what they do, do not relate well to other people, etc.) are more likely to abuse alcohol;

• People whose social group drinks heavily may develop problems themselves;

• Highly stressful life events like isolation, violence and abuse may create a greater risk of alcohol abuse as a coping method.

Research also shows that "substance abuse frequently occurs within a social context characterized by social and economic disadvantage" (Parry, 2000). That is, people more often drink in problematic ways in situations of poverty and unemployment, low education level, unstable family conditions, unstable social environments, and lack of resources and supports. The connections between alcohol abuse and these other factors that affect health are complex. However, it is likely that when individuals do not have the tools to make a meaningful life, or feel a lack of secure rootedness in family and society, and/or do not have a sense of direction for a positive future, they may learn to use alcohol as a coping tool. This alcohol misuse then creates even more problems. To a great extent, then, alcohol misuse and problems arise out of personal psychological factors, learned social patterns, the rewards a person gets from drinking, and the person's expectations. Harmful and disadvantaged environmental, economic and social conditions increase the likelihood that people will develop problems (Parry, 2000; Kushner, Abrams & Borchadt, 2000; Jané-Llopis & Matytsina, 2006).

2.6.3. Harm Reduction Model

The harm reduction approach takes the holistic view that the essential goal of helping should be to decrease the "health and social problems associated with the use and control of alcohol and other drugs among all individuals, families and communities" (Marlatt, Larimer, Baer &

Quigley, 1993). It is a public health approach. Its goal is not necessarily to stop people from drinking, but to teach them how to drink without creating physical, legal, financial, or social problems for themselves and others. Harm reduction is not one particular strategy. It encompasses a variety of methods to help individuals control their drinking or their desire to drink. It includes counselling for other client issues either directly or through referrals to other care providers.

Abstinence is not a requirement in harm reduction methods, but it is always presented as an option. It is a fact that alcohol provides pleasure in many ways and most people either do not want to quit drinking completely, or they have mixed feelings. It is also a fact that some people simply should not drink at all, either temporarily (e.g., during illness, pregnancy, or if they are on medications, etc.) or permanently (e.g., those who have developed serious alcohol dependency). The harm reduction approach believes clients cannot be forced to do something they do not want to do, they have a right to choose what they want, and a reduction in problems is better than no change at all (Marlatt & Witkiewitz, 2002).

The counsellor does not take the position of being the authority telling clients what to do. Instead, the counsellor sets up a respectful and collaborative relationship that acknowledges clients' rights to participation, control, and ownership of their life decisions. Therefore, the counsellor helps clients determine what kind of change they want to accomplish (a specific cut-back level or abstinence) and then provides ideas and activities for reaching the goal. Clients' goals may change and their plans may change. There is much evidence that when people are allowed to make their own choices, quite a few in fact choose abstinence, sometimes immediately, sometimes later on. Furthermore, they will be more successful because they will be more committed to the goal. This is true in many areas of life. When people are ordered to do something, they may resist. Harm reduction methods are also extremely useful in treatment aftercare, and in helping clients manage drinking triggers and psychological habits (Marlatt, Blume & Parks, 2001).

Some people question the harm reduction approach. They believe that if alcohol abusers are told they can learn to control their drinking, it will lead to increased drinking and eventually the development of dependence. However, all the evidence shows just the opposite. Harm reduction can be highly successful in helping those with alcohol abuse disorders to reduce their drinking to levels that create no problems or at least fewer problems (Marlatt, *et al*., 1993; National Institute for Alcohol Abuse and Alcoholism, 2000). It has also been shown to be a useful middle step in helping alcohol dependent people become abstinent. People trying to change heavy drinking patterns or achieve abstinence are not often immediately successful. It can take time and several attempts. Harm reduction provides a less stressful, less guilt-producing path to change while reducing community, family, and individual physical and mental harm. Harm reduction has been shown to be a powerful tool for change, but it must be presented appropriately (Marlatt & Witkiewitz, 2002).

It is not enough merely to tell people to cut down on their drinking or to stay away from alcohol. Alcohol misuse is not an isolated behaviour. Effective harm reduction counselling is a holistic process that helps people look at their whole lives and the role alcohol plays (Marlatt, Blume & Parks, 2001). Areas to be considered include the following:

• Assessing drinking levels and the possible future consequences of the risky drinking;

• Assessing readiness to change;

• Looking at underlying factors in harmful drinking (e.g., drinking cues or triggers, self-esteem, family problems, past trauma, etc.);

• Analysing the benefits and problems of current drinking;

• Setting goals;

• Preparing for possible positive and negative consequences of change;

• Monitoring/managing drinking behaviour and/or the desire to drink;

• Learning new ways of handling problems, dealing with emotions, relating to others, finding peace, getting what one wants, etc.

A longer period of such outpatient treatment (e.g. 10 to 12 sessions) may be necessary for those with serious alcohol and/or personal problems.

2.6.4. Motivational interview

Why does one session of basic advice work with some people and intensive treatment (even with aftercare) not work with others? Alcohol misuse is resistant to change. Evidence suggests that a person's readiness to change is a major factor in success. No change is possible unless the person acknowledges a problem and wants to do something about it. As in other areas of life, people change only when they have decided there is a need to change. Experts agree that empathic (understanding) motivational interviewing is an effective treatment tool that helps clients come to their own realization of negative consequences and the need for change (Baer, Roserngren, Dunn, Wells, Olge & Hartzler, 2003).

One model increasingly used by many alcohol treatment programmes is the Stages of Change model. This model was originally developed more than 20 years ago to help people stop smoking, but has been found to be an effective tool in many kinds of change. This approach looks at behaviour change as a process that depends on the person's thinking about alcohol use and problems.

Five steps of change according to Prochaska's motivational interview

• Pre-contemplation

During this stage, the person might have some awareness and concern about his/her excessive/inappropriate drinking, but does not really acknowledge that there is a problem. For example, bosses or family may have said something or the person may have been involved in a fight while drunk, etc. She/he may think about changing sometime, but not in any definite way. Counsellors at this stage gently help the client to come to the conclusion that perhaps there is a reason to change (Prochaska, DiClemente & Norcross, 1992).

• Contemplation

The person decides to do something about his/her drinking, although there are probably mixed feelings. The person may be determined that she/he will change, but not yet. At this point, the person will be more willing to discuss the pros and cons and options. Counselling focuses on helping this person to see the negative consequences of drinking alcohol that are already there in his/her life (Prochaska, *et al.*, 1992).

• Preparation

The person makes an active decision and commitment to change. The counsellor helps the client gather information, assesses options and considers positive and negative consequences of each option. This is an important stage because this is the beginning of a plan. The plan must be based on sufficient information and on the client's needs.

• Action

At this stage the person is fully committed and begins the plan to cut down alcohol consumption or stop drinking. The person uses strategies that will lead to the achievement of the goals set.

• Maintenance

The person is following the plan and uses strategies to stay on track. The person practises the new strategies to help him/her to stay on track.

• Relapse

As new habits do not come easily, most people will probably fall back into earlier patterns at least occasionally. It is important to help them understand that they may get off track, but they can plan how to get back on track. Relapses are excellent learning situations for examining what led this to happen and what can be done the next time to prevent it from happening again. People

may go back and forth between stages several times before a change is complete. They should simply be helped to work through the issues and move on again (Prochaska, *et al.*, 1992).

Principles of motivational interview

Miller and Rollnick (2002) describe four main principles that are essential in motivational interviewing as follows:

• Expressing empathy:

A counsellor must express empathy as it helps build a trusting relationship (respect, acceptance of what the client says and how she/he sees things, understanding of feelings and circumstances, encouragement of expression of thoughts and feelings, without counsellor judgment).

• Developing discrepancy:

The counsellor helps clients who believe they do not have a problem to see that the belief does not fit with the facts of their lives. For example, the client may say that alcohol is not a problem or that he has a job, his girlfriend does not mind his drinking, etc. At the same time he might also mention that he is off work for a couple of days a week because of hangovers and that he and his girlfriend have been arguing a lot. This contradicts the first statements, but at this point the counsellor would ask some non-confrontational questions related to those events, which encourages the client to think about the situations and the possible role of alcohol. However, the client needs to make the connections her/himself, not the counsellor.

• Rolling with resistance:

If the client denies problems even though they may be obvious, or resists reviewing her/his behaviour, the counsellor should not argue. Instead, the counsellor should eventually, gently turn that resistance back in a way that gets the client thinking again. For example, "OK, I know what you're saying. But there's something you mentioned last time that I don't understand. . . . Can you tell me more about . . . ?"

• Supporting self-efficacy: The counsellor should always make it clear that clients have the ability to make the changes they want, have control over their lives and have personal strengths and resources that make them capable. The counsellor believes in the client and the client learns to believe in him/herself.

Once clients themselves have decided that they may need to do something about their problem, the counsellor and client can move to the next stage which is making a plan. Motivational interviewing is an important part of all helping strategies, from brief counselling to residential treatment (Fleming, Barry, Manwell, Johnson & London, 1997).

2.6.5. Health belief model

The Heath Belief Model (HBM) is commonly used in health education and health promotion (Glanz, Rimer & Lewis, 2002). It was developed in the 1950s in an effort to explain why screening programmes offered by the U.S Public health Service, especially for tuberculosis, were not very successful (Hochbaum, 1958). The model propositions that health-seeking behaviour is influenced by a person's perception of a threat posed by a health problem and the value associated with actions aimed at decreasing the risk (Hochbaum, 1958). Personal perception is influenced by a wide range of interpersonal factors affecting behaviour.

The Health Belief Model has four main hypotheses, namely perceived seriousness, perceived susceptibility, perceived benefits and perceived barriers (Glanz, Rimer & Lewis, 2002). Each of these hypotheses may be used on its own or combined with others to explain behaviour. The model was further modified to include cues to action, motivating factors and self-efficacy.

Perceived seriousness explains how an individual either changes or maintains a detrimental behaviour based on how serious they believe the consequences of maintaining the behaviour are.

This perception is either based on medical information or personal beliefs about the consequences of the behaviour if it is not changed.

The greater the perceived risk, the greater the likelihood of engaging in risk-reducing behaviour; this is termed perceived susceptibility. If individuals recognize that their behaviour when they are under the influence of alcohol makes them vulnerable to many health hazards, they would try to engage in risk-reducing behaviour. However, if an individual does not believe that their behaviour is risky, the chances are that the individual will continue indulging in risky behaviour. When perceived seriousness is combined with perceived susceptibility, good health behaviour is promoted (Glanz, Rimer & Lewis, 2002).

The next hypothesis is perceived benefits. This is a personal opinion of the value of a new behaviour in decreasing the risk of contracting a disease. New health behaviour might be adopted if, by doing so, one perceives that it will reduce one's risk of developing a disease. If an individual perceives that reducing the amount of alcohol they take, avoiding certain places which may trigger alcohol consumption or even deciding to stop drinking altogether will reduce his/her risk of experiencing problems arising from his/her drinking behaviour; the chances are that he/she will change their behaviour (Glanz, Rimer & Lewis, 2002).

Perceived barriers are an individual's appraisal of the stumbling blocks that are in the way of adopting new health behaviour. For instance, a female student who lives in a university residence where other students perpetually host parties may perceive that as a barrier to her changing her drinking habits. To adopt healthy behaviour, one has to believe that the benefits outweigh the consequences of continuing with the old risky behaviour (Centre for Disease Control and Prevention, 2004).

Modifying variables, such as culture, education level, skill, motivation and previous experiences, were added to the four hypotheses. These are the characteristics of an individual that influence personal views. Previous experiences increase the perception of vulnerability as one would be

aware of exposure to risk. They may also reduce one's perception of the seriousness of the behaviour because the consequences were dealt with easily (Glanz, Rimer & Lewis, 2002).

Cues to action are events, people or things which motivate people to act or change behaviour. These include a reminder by a family member, mass media campaigns (Graham, 2002) and advice from others (Ali, 2002). Specifically, significant others who constantly remind individuals about their behaviour or reproach the use of alcohol, or posters warning the public of the dangers of alcohol abuse serve as cues to action.

Self-efficacy occurs when one believes that one is able to accomplish something (Bandura, 1977). Bandura proposes that, generally, individuals do not engage in a new experience unless they believe that they can go through with it. An individual may believe that changing his or her behaviour will be beneficial. However, if their perception of potential barriers is greater than that of perceived benefits, they will probably not adopt new behaviour.

2.7. CONCEPTUALIZATION OF ALCOHOL CONSUMPTION

Drink	Volume	% of alcohol in a drink	Units of alcohol
Can of lager or cider	340 ml	5%	1 unit
Glass of wine	120 ml	12%	1 unit
A single tot of spirits(whisky, gin or vodka	25 ml	43%	1 unit
A small glass of liqueur or aperitif	25 ml	30 %	1 unit
Cartoon of ordinary commercial sorghum beer	500ml	3%	1 unit

Table 2.1: Description of alcoholic beverages

2.7.1. Categories of alcohol drinkers

According to WHO (2000) there are different categories of alcohol drinkers ranging from those who drink safely and sensibly to those who are dependent on alcohol. These categories depend on the quantity of alcohol consumed and the frequency of drinking. These categories will be discussed below.

2.7.1.1. Safe and sensible drinking

Sensible drinking is defined by WHO (2000) as the consumption of alcohol, while still remaining\ in control of one's own body, mind and behaviour. People who fall under this category drink only a limited amount of alcohol and do not drink every day. Sensible drinking for men is four units of alcohol per occasion, and three units for women on one occasion as per the table above. It is advisable not to drink at all in the following situations:

- When pregnant or breast feeding;
- When very tired;
- When food has not been consumed for several hours;
- When driving and operating machinery;
- When taking medicine;
- If one is not in control of one's drinking.

2.7.1.2. Low risk drinking

The social drinker consumes alcohol in amounts and circumstances that appear socially acceptable. However, this person may develop a serious alcohol problem if there is an inclination to over-indulge or occasionally to use alcohol to cope with stress (Edwards, Marshall & Cook, 1997).

2.7.1.3. Harmful drinking

Harmful drinking is drinking alcohol that results in adverse effects; for example, physical or psychological harm. Harmful drinkers consume alcohol above the recommended daily, weekly, or per-occasion amounts; that is, more than three standard drinks for men and more than two standard drinks for women and all above 65 years of age.

The harmful drinker drinks in socially appropriate circumstances, but actively seeks an occasion for drinking in a social situation. He or she has more than two drinks every day, continuously seeks out situations in which to drink, and may often over-consume but not exceed the alcohol consumed by her/his peers. He or she may never appear drunk or seem to be affected in social or work routines, but as drinking escalates, it becomes increasingly linked to seeking physical or psychological relief. Problem drinkers emerge from this population. Neither the person nor his/her acquaintances suspect an alcohol abuse problem (Edwards, *et al.*, 1997).

2.7.1.4. Hazardous drinking

Harmful drinking is the consumption of alcohol that places a person at risk for adverse health effects. Alcohol consumption is associated with social consequences such as problems with family, fighting and financial problems. Most people who experience alcohol-related problems have mild to moderate problems. These people are unlikely to meet diagnostic criteria for severe alcohol dependence or alcoholism, despite their frequent drinking and occasional negative consequences from drinking. The majority of these groups are more appropriately classified as problem drinkers (Burge & Schneider, 1999).

The problem drinker gets drunk on occasion and also exhibits medical, legal, social or psychological consequences of excessive alcohol consumption; and makes or thinks of making attempts at cutting down or quitting. Functioning may vary from seemingly intact behaviour to difficulty in coping. The drinker may deny a drinking problem and attribute blame to external events or persons. Denial is common even among those with multiple arrests for drunken driving (Edwards, *et al.*, 1997).

2.7.1.5. Alcohol dependence

The alcohol-dependent drinker tries to consume the same excessive amount of alcohol regardless of mood situation, although external circumstances might constrain drinking for a time. Most continue to work, some even in high positions. Alcohol is given top priority in all situations; for example, one goes to a party to drink, not to socialize. Tolerance to alcohol develops, and withdrawal symptoms may be noted during the workday when the blood alcohol level drops. Drinking at lunch and during the cocktail hour is needed to relieve symptoms. The patient is aware of the compulsion to drink but is difficult to reach unless family or the employer notes that there is a problem or serious medical complications develop (Edwards, *et al.*, 1997).

2.7.1.6. Severely alcohol dependency

This is a severely deteriorated drinker who maintains a constant state of intoxication; has no care for his or her person or surroundings; undergoes periodic hospitalization for detoxification and for medical care necessary after alcohol-related trauma or organ damage (Edwards, *et al*., 1997).

2.7.2. The role of alcohol in South African history

During pre-colonial days, the consumption of alcohol was preserved for elders, and other senior or authority figures, including health practitioners and healers. Solitary drinking was not tolerated. Drinking did not occur every day but only on special occasions such as religious feasts, funerals and marriage ceremonies. Drinking was less common among youth and women of childbearing age. These were only allowed to drink only when engaging in rituals and religious ceremonies (Gumede, 1995). Traditionally in South Africa, alcohol served many purposes. It was used as a means of payment, and for strengthening friendships, and was associated with manhood and the strengthening of the body (Setlalentoa, Pisa, Thekisho, Ryke & Loots, 2010).

Since then alcohol has been prominent in South Africa, both socially and politically. Women used to cultivate maize and sorghum to produce food and ferment beer. Traditional African beer played an important role in the lives of black people of South Africa, both culturally and religiously. People would drink alcohol when traditional ceremonies and feasts were held

(Gumede, 1995). According to Gumede (1995), two feasts recorded in the history of black people are the feast of the first fruits (Umkhosi Wokweshwana) which took place after the first harvest, and the festival of the Queen of the Rainbow (Umkhosika Nonkhubulwana) involved the consumption of low alcohol content beer. These feasts were celebrated by women after the first rainfall.

Gumede (1995) argues that the British colonial government prohibited drinking among non-white population groups as it believed that alcohol caused social decay and disorder among blacks. With the arrival of European liquor called “Cape Smoke”, Africans began to move away from traditional African beer to liquor. This was seen as unacceptable by European farmers because they believed alcohol made Africans disobedient. The disobedience was displayed when workers were under the influence of liquor. They no longer took orders, would not come to work, and would even talk back to their employers. This led to many laws being passed to control drinking by Africans.

Among white South Africans, malt, beer and wine were popular drinks, particularly during mealtimes and social functions such as weddings, communion at church (wine) and sporting events. To black South Africans, among many, alcohol is still a symbol of personal and economic freedom (Gumede, 1995).

During modern times, drinking is widespread among different members of the community. With the laws/controls that regulated production, and the sale and access to alcohol by Africans led to the eruption of illegal liquor outlets, such as shebeens. These are private homes where alcohol is brewed, sold and consumed. The informal/illegal liquor sector in South Africa is not regulated and operates outside the law. It comprises hundreds of small home brewers of sorghum beer. The informal liquor sector also consists of as many as 200 000 liquor outlets, largely shebeens. In South Africa, the alcohol industry is a major source of employment and government revenue (Gumede, 1995; Parry & Bennets, 1998; Setlalentoa, *et al*., 2010).

2.8. CAUSES OF DRINKING PROBLEMS

Drinking behaviour, and the problems with which it is associated, are determined by multiple, interacting factors that concern both an individual and his or her environment. Those factors will be discussed in the following section.

Research shows that many adolescents start to drink at very young ages. In 2003, the average age of first use of alcohol was about fourteen, compared to about seventeen-and-a half in 1965 (Newes-Adeyi, Chen, Williams & Faden, 2005; SAMHSA, 2003). People who reported starting to drink before the age of 15 were also four times more likely to report meeting the criteria for alcohol dependence at some point in their lives (Grant & Dawson, 2003). In fact, new research shows that the serious drinking problems (including what is called alcoholism) typically associated with middle age, actually begin to appear much earlier, during young adulthood and even during adolescence.

As children move from adolescence to young adulthood, they encounter dramatic physical, emotional, and lifestyle changes. Developmental transitions, such as puberty and increasing independence, have been associated with alcohol use. So in a sense, just being an adolescent may be a key risk factor not only for starting to drink, but also for drinking dangerously (Newes-Adeyi, *et al.*, 2005).

2.8.1. Risk-Taking

Research shows that the brain keeps developing well into the twenties, during which time it continues to establish important communication connections and further refines its function. Scientists believe that this lengthy developmental period may help explain some of the behaviour which is characteristic of adolescence; for example, their tendency to seek out new and potentially dangerous situations. For some teens, thrill-seeking might include experimenting with alcohol. Developmental changes also offer a possible physiological explanation for why teens act so impulsively, often not recognising that their actions, such as drinking, have consequences (Grant & Dawson, 1998).

2.8.2. Expectancies

How people view alcohol and its effects also influences their drinking behaviour, including whether they begin to drink and how much they drink. An adolescent who expects drinking to be a pleasurable experience is more likely to drink than one who does not. An important area of alcohol research is focusing on how expectancy influences drinking patterns from childhood through adolescence and into young adulthood (Lang & Strizke, 1993; Smith, Goldman, Greenbaum & Christiansen, 1995; Zucker, Kincaid, Fitzgerald & Bingham, 1995; Dunn & Goldman, 1996). Beliefs about alcohol are established very early in life, even before the child begins elementary school (Noll, Zucker & Greenberg, 1990). Before age 9, children generally view alcohol negatively and see drinking as bad, with adverse effects. By about age 13, however, their expectancies shift, becoming more positive (Dunn & Goldman, 1996; Dunn & Goldman, 1998). As would be expected, adolescents who drink the most, also place the greatest emphasis on the positive and arousing effects of alcohol.

2.8.3. Sensitivity and tolerance to alcohol

Differences between the adult brain and the brain of the maturing adolescent may also help to explain why many young drinkers are able to consume much larger amounts of alcohol than adults (Johnston, O'Malley & Bachman, 2003) before experiencing the negative consequences of drinking, such as drowsiness, lack of coordination, and withdrawal/hangover effects (Spear, 2000; Spear & Varlinskaya, 2005). This unusual tolerance may help to explain the high rates of binge drinking among young adults. At the same time, adolescents appear to be particularly sensitive to the positive effects of drinking, such as feeling more at ease in social situations. Young people may drink more than adults because of these positive social experiences (Spear, 2000; Spear & Varlinskaya, 2005).

2.8.4. Personality characteristics and psychiatric comorbidity

Children who begin to drink at a very early age (before age 12) often share similar personality characteristics that may make them more likely to start drinking. Young people who are disruptive, hyperactive and aggressive are often referred to as having conduct problems or being

antisocial. Those who are depressed, withdrawn, or anxious may be at the greatest risk of developing alcohol problems (Zucker, Wong, Puttler & Fitzgerald, 2003). Other behaviour problems associated with alcohol use include rebelliousness (Brook, Whiteman, Finch & Cohen, 1995), difficulty avoiding harm or harmful situations (Jones & Heaven, 1998), and a host of other traits seen in young people who act without regard for rules or the feelings of others. This is known as dis-inhibition (Moss & Kirisci, 1995; Colder & Chassin, 1997; Colder & O'Connor, 2002).

2.8.5. Hereditary factors

A strong family history of alcohol-related disorders indicates a vulnerability to alcohol-use disorder. About 40-60 % of the risk is explained by genetic factors and the remainder is a combination of genetic factors and the environment (Rodseth, 2012). Some of the behavioural and physiological factors that converge to increase or decrease a person's risk of developing alcohol problems, including tolerance to alcohol's effects, may be directly linked to genetics. For example, being a child of an alcoholic or having several alcoholic family members places a person at greater risk of developing alcohol problems. Children of alcoholics (COAs) are between four and ten times more likely to become alcoholics themselves than are children who have no close relatives with alcoholism (Russell, 1990). COAs also are more likely to begin drinking at a young age (Donovan, 2004) and to progress to developing drinking problems more quickly (Grant & Dawson, 1998).

Research shows that COAs may have subtle brain differences, which could be markers for developing later alcohol problems (Tapert & Schweinsburg, 2005). Using high-tech brain-imaging techniques, scientists have found that COAs have a distinctive feature in one brainwave pattern (called a P300 response) that could be a marker for later alcoholism risk (Hill & Steinhauer, 1993).

Some studies suggest that these brain differences may be particularly evident in people who also have certain behavioural traits, such as signs of conduct disorder, antisocial personality disorder,

sensation-seeking, or poor impulse control (Tarter, Altermen & Edwards, 1985; Schuckit & Smith, 1997; Schuckit, 1998; Bauer & Hesselbrock, 1999a; Bauer & Hesselbrock, 1999b). Studying how the brain's structure and function translates to behaviour will help researchers to better understand how pre-drinking risk factors shape later alcohol use; for example, does a person who is depressed drink to alleviate his or her depression, or does drinking lead to changes in his brain that result in feelings of depression?

Studies have confirmed that there is a genetic component to a drinking behaviour and drinking problems, in addition to the undeniably important influences of the environment (Brook, *et al.*, 1995; Parry & Bennets, 1998; Botvin & Kantor, 2000). Behaviour such as alcohol consumption cannot be totally understood on the basis of genes or environment alone. Instead, it must be seen as the product of the interaction between a variety of genetic and environmental influences. The individual is more or less predisposed to heavy drinking, or to a particular alcohol-related problem or to become depend upon alcohol. This level of predisposition determines the risk or the probability of being a heavy drinker or of suffering from a particular drinking related problem (Edwards, *et al.*, 1997; Parry, *et al.*, 2004).

2.8.6. Environmental Aspects

Drinking behaviour reflects a complex interplay between inherited and environmental factors. The implications of environmental factors in causing alcohol drinking are only beginning to be explored in adolescence (Rose, Dick, Vicken & Kaprio, 2001). What influences drinking at one age may not have the same impact at another. As Rose, Dick, Viken & Kaprio (2001) show, genetic factors appear to have more influence on adolescent drinking behaviour in late adolescence than in mid-adolescence.

Environmental factors, such as the influence of parents and peers, also play a role in alcohol use (Halpern-Felsher & Biehl, 2004). For example, parents who drink more and who view drinking favourably may have children who drink more, and an adolescent girl with an older or adult boyfriend is more likely to use alcohol and other drugs and to engage in delinquent behaviour.

Researchers have examined other environmental influences as well, such as the impact of the media (Saffer, 1996; Parry, 2002). Today, alcohol is widely available and aggressively promoted through television, radio, billboards, and the Internet. Researchers have studied how young people react to these advertisements (Tibbs & Parry, 1994; Parry, 2002). In a study of learners in Grades 3, 6 and 9, those who found alcohol advertisements desirable were more likely to view drinking positively and to want to purchase products with alcohol logos (Austin & Knaus, 2000). Research results are inconclusive, however, on whether these positive views of alcohol actually lead to underage drinking.

2.8.7. Political and economic factors

Some political and economic circumstances, like reducing the real price of alcohol, tend to increase the overall consumption of alcohol by the population (Parry, 2005). Similarly, measures which make alcohol more readily available by reducing restrictions on its supply also tend to increase consumption. Thus, major influences upon per capita consumption in a population include factors amenable to political manipulation, such as taxation, licensing laws and trade agreements. Manipulation of such influences can have an enormous impact on the level of alcohol consumption of a population. Conversely, failure to utilize such controls can allow alcohol consumption to escalate and related problems to reach epidemic proportions (Edwards, *et al*., 1997; Parry, 2005).

2.8.8. Socio-cultural factors

The availability of alcohol, affordability of alcohol and acceptability of alcohol plays an important role in causing drinking problems. These factors are determined to a large degree by social and cultural values. However, these influences operate at various levels; for example, national and racial, religious, occupational and family influences may all play a part. Some cultures and societies, for example Islamic culture, promote total abstinence. At the other extreme are permissive culture;, for example Mediterranean countries, where drinking is actively endorsed. Such countries usually have high rates of morbidity attributable to alcoholic liver diseases (Edwards, *et al*., 1997; Parry & Bennets, 1998).

Between these extremes there may be a mixture of cultural influences encouraging or discouraging drinking; for example, in Jewish societies drinking is generally socially accepted, but strong negative connotations are attached to deviant drinking behaviour such as public drunkenness.

Culture can influence the pattern and context as well as the amount of alcohol consumption. Patterns of alcohol consumption may, in turn, be important determinants of a drinking problem. In France, habitual drinking of wine with meals is associated with a relatively high, but constant per capita consumption, which predisposes one towards chronic medical complications such cirrhosis and certain cancers (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2006).

Culture may also influence the way in which people behave when intoxicated. Family culture may also be an important influence on drinking. In addition to genetic influences, it seems likely that children will inherit heavy drinking patterns by virtue of learning this behaviour and any associated values and beliefs from their parents. However, this does not necessarily mean that all heavy-drinking parents produce heavy-drinking children (Edwards, *et al*., 1997).

2.8.9. Stress and life events

Major life events and everyday hassles both appear to increase the amounts that people drink. This may be explained on the basis that alcohol relieves anxiety and is thus used as a means of coping with stress. An increased frequency of life events usually precedes the onset of alcohol misuse (Sayette, 1999; Arch, Craske, Stein, Sherbourne & Roy-Byrne, 2006). However, evidence from research conducted is not consistent and heavy drinking tends to cause further stress in the form of the problems such as divorce, unemployment and ill health. There is also evidence that alcohol can exacerbate anxiety rather than relieve it (Edwards, *et al*., 1997; Arch, *et al*., 2006; Jané-Llopis & Matsytsina, 2006).

Depression and anxiety is consistently predicted among pregnant women who continue to use alcohol antenatally (Homish, Cornelius, Richardson & Day, 2004). Depression is argued by some as a justification for both initiating and maintaining alcohol and substance use in pregnancy. In women with alcohol and/or substance use disorders, perceived stress is associated with increased use and increased risk of relapse. In South Africa pregnant women tend to have high levels of perceived stress and pose a significant and public health problem (Vythilingum, Roos, Faure, Geerts & Stein, 2013).

2.8.10. Contextual drinking problems

Drinking is a perfect example of a contextual problem. Relatively modest alcohol consumption, which would cause no social, psychological or medical problems in most other contexts, may be the cause of serious injury or death when the drinker is also the driver of a car. Similar considerations also apply to other forms of transportation and safety-sensitive environments (Edwards, *et al*., 1997).

2.9. FACTORS THAT INFLUENCE ALCOHOL CONSUMPTION

Several factors contribute to an individual's decision to drink or not to drink alcohol on any given occasion. These factors are discussed below.

The individual is usually influenced to drink alcohol by the immediate environment, such as the nature of the occasion, the individual's special desire, physical and mental state and also the degree of peer pressure. In addition, socio-cultural influences and historical and contemporary factors contribute to an individual's attitudes, beliefs and values regarding the use of alcohol. These may include religious, ethnic and family customs (Fishman, 1992; Parry & Bennets, 1998).

However, compared with the circumstances of the immediate situation, socio-cultural influences have less effect on an individual's decision to drink. In many cases, persons with particular

beliefs and expectations about drinking come into contact with people who have different attitudes to alcohol use. Thus, an individual may be placed in a situation that demands social drinking at a level that he or she would previously have considered to be alcohol misuse (Fishman, 1992).

Factors in alcohol misuse are likely to include: peer pressure (particularly among young persons) and communal drinking among adults; availability, particularly in more disadvantaged communities; the falling price of certain kinds of alcohol products (e.g. malt beer and brandy) relative to the consumer price index; chemical dependence on alcohol; poor social conditions and boredom; a lack of social controls to deal with those misusing substances; and societal attitudes in general (Rocha-Silva, Miranda & Erasmus, 1996; Parry & Bennetts, 1998).

Ghuman, Meyer-Weitz and Knight, (2012) found in their study that 54 % of students had used alcohol before, 14,5% had had their first drink before the age of 13, and 32% engaged in binge drinking. Students, who were more likely to have used alcohol, were older, male, white and had often seen their fathers drunk, had friends who frequently drank alcohol. With regard to availability and access, for example, there are currently almost 23 000 licensed liquor outlets with an estimated 150 000 to 200 000 unlicensed outlets, yielding approximately one liquor outlet for every 190 persons in South Africa (Parry & Bennetts, 1998). Research has shown that school-going youth find it easy to purchase alcohol from bottle stores, supermarkets, bars and shebeens (Tibbs, Parry, Stretch & Brice, 1994).

2.10. CONSEQUENCES OF ALCOHOL CONSUMPTION

According to the Constitution of the WHO, health is "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity". This definition, therefore, takes into account not just physical and mental harms, but also social harms, both for the drinker and for others.

Alcohol affects virtually every organ system in the body (Schukit, 2009). A few examples of harm to others are included in the analysis of alcohol's contribution to the global burden of disease. These include perinatal conditions attributable to the mother's drinking during pregnancy, and injuries, particularly assault injuries. However, the scope of alcohol-related social harm and of harm to others stretches well beyond these items. Thus, a recent study in Australia (Laslett, *et al*., 2011) identified the following harms to others associated with drinking:

- Harms identified in records—these included deaths and hospitalizations (e.g., attributed to traffic injuries because of driving under the influence), child abuse or negligence cases involving a caregiver's drinking, and domestic and other assaults;
- Harms based on survey reports — these included negative effects on co-workers, household members, other relatives and friends, strangers, and on the community as a whole.

These effects were quite prevalent. Thus, the researchers estimated that within one year, more than 350 deaths were attributed to drinking by others, and more than 10 million Australians (or 70% of all adults) were negatively affected by a stranger's drinking (Laslett, *et al*., 2011).

2.10.1. Health impacts of alcohol

In 2000, alcohol was responsible for 4% of the global burden of disease, which is more or less equal to the damage caused to society by tobacco use (4.1%). Alcohol was estimated to have caused 1.8 million deaths or 3.2% of all deaths globally. Contribution to the global burden of disease was considerably higher in developed countries (9.2%) than in developing countries, partly owing to the greater consumption of alcohol in these countries and partly owing to the high burden from other diseases in developing countries (such as AIDS, Malaria, childhood illnesses, etc.). Alcohol consumption contributes to disease, injury, disability and premature death more than any other risk factor in developing countries with low mortality rates. In high mortality regions including Afro Region E, the GBD was calculated to be 1.6%. For South Africa the estimated burden owing to alcohol (death and disability) has been calculated to be 7.0%, 10.5% for males and 3.1% for females (Schneider, *et al*., 2007)

2.10.2. Direct biological Impacts

Schneider, *et al.*, (2007) argue that both acute intoxication and chronic long-term excessive drinking may have adverse effects on the brain, central nervous and muscular system, liver, heart (though there are also some positive effects for certain groups of people), blood cells, gastrointestinal system, respiratory system, reproductive system, as well as the immune system. Alcohol use contributes to more than 60 diseases and conditions. The conditions mentioned below are some of the most important (the prevalence rates of most of these diseases in South Africa are generally not known and, unless specifically stated, rates refer to international figures).

2.10.3. Alcoholic liver disease

Alcohol is absorbed quickly into the blood system, passes through organs where it oxidizes slowly and can cause damage. The most common organ affected is the liver. Mortality studies have consistently demonstrated that heavy drinkers die from liver disease at a much higher rate than the general population. Types of alcoholic liver disease include alcoholic fatty liver (prevalent in about 20% of heavy drinkers); alcoholic hepatitis; and alcohol cirrhosis (about 10-15% of people with alcohol dependence develop cirrhosis). Alcohol also increases the risk of developing liver cancer (Schneider, *et al.*, 2007; Reuben, 2007).

Alcohol hepatitis is characterized by the inflammation (necrosis) of the liver, jaundice and abdominal pain. Scar tissue may replace healthy tissue, leading to a process of "fibrosis". The condition is reversible with abstinence. Alcohol cirrhosis is the most advanced form of liver disease. The liver is characterized by extensive fibrosis that stiffens blood vessels and distorts the internal structure of the liver. This damage results in severe functional impairment and may result in secondary malfunction of other organs, including the brain and kidneys. The amount of alcohol consumed and the duration of that consumption are closely associated with cirrhosis. More importantly, as consumption increases, the risk of cirrhosis is greater for women than for men. Moreover, consumption of alcohol without food results in higher risk than with food. Cirrhosis can stabilize with abstinence. While alcoholic fatty liver, alcohol hepatitis and cirrhosis

have been considered to be sequentially related, (that is, progressing in this order) this is not always the case. Some cirrhosis develops without hepatitis and hepatitis may have a sudden onset and a rapid course resulting in death even before cirrhosis can develop (Schneider, *et al.*, 2007; Reuben, 2007).

2.10.4. Effects on the heart

Alcohol can be beneficial or harmful to the cardiovascular system depending on the amounts consumed and the characteristics of the consumer. Low to moderate consumption has been shown to have coronary benefits for people who are 40 years and older. However, according to the WHO (2005):

> In some industrialized countries where the condition is common and injuries and violence are rare, alcohol consumption may prevent about as many deaths as it causes in some segments of the population. The patterns of drinking in many countries, however, often with heavy episodic consumption, are likely to increase rather than decrease the occurrence of coronary heart disease.

Questions have also been raised regarding the transferability of these findings of the benefits to developing countries. As coronary heart disease is associated with diet, lifestyle and age, and given that the diet of many traditional developing countries is relatively low in fat and high in fibre (a factor that is often given as one of the reasons for the comparatively low incidence of heart disease in developing countries), the findings of the protective effects may not be applicable. Moreover, even if moderate drinking is protective, heavy alcohol consumption could damage the cardiovascular system, causing heart muscle disorders, irregular heart rhythms, high blood pressure and strokes (Schneider, *et al.*, 2007).

2.10.5. Effects on blood cells

Alcohol has numerous adverse effects on blood cells and their functions. Heavy drinking can cause generalized suppression of blood cell production and the production of abnormal blood cell precursors that cannot manufacture cells. There is evidence that blood pressure increases

with increased drinking. A study in India found alcohol consumption to be a significant risk factor for hypertension. A meta-analysis found that 11% of cases of hypertension in males and 6% in females could be directly causally attributed to alcohol (Schneider, *et al*., 2007).

2.10.6. Gastrointestinal and respiratory systems

Alcohol can interfere with the structure and function of the gastrointestinal tract. For example, alcohol can impair the muscles separating the oesophagus from the stomach increasing the risk of cancer. Alcohol interferes with the muscle movement of the small and large intestines and the absorption of nutrients into the body (Schneider, *et al*., 2007).

Epidemiological research in developing countries has found a causal link between heavy alcohol consumption and pancreatitis. Eighty per cent of cases of chronic pancreatitis were attributable to alcohol.

A meta-analysis of more than 200 studies found that alcohol strongly increased the risks of various types of cancers (oral cavity, pharynx, oesophagus and larynx) and also revealed statistically significant increases in risk for cancers such as stomach, colon, rectum, liver, breast and ovaries (Schneider, *et al*., 2007).

2.10.7. Reproductive system

In men, alcohol can result in loss of libido, reduced potency, shrinking in size of testes and penis, reduced or absent sperm formation and infertility. In women, alcohol has been found to result in menstrual irregularities, shrinking of breast and external genitalia, as well as and sexual difficulties. It also affects the female reproductive capacity (Schneider, *et al*., 2007).

2.10.8. Immune system

Alcohol consumption affects various components of the immune system. Both chronic and acute alcohol consumption disrupts the immune system functions (Szabo & Mandrekar, 2009). It is evident from animal and in-vitro studies that alcohol impairs various aspects of the immune

system and, particularly, increases the susceptibility to HIV infection. It may also interfere with adherence to anti-retroviral treatment. Some evidence also suggests that alcohol may lead to accelerated progression of the disease (Schneider, *et al*., 2007).

2.10.9. Effects on the brain and central nervous system

Alcohol directly affects brain function in a number of ways. At a behavioural level, neurological disorders resulting from alcohol can result in changes in emotions, personality, impaired perception, learning and memory. The detrimental effects of alcohol on the brain may be similar to Alzheimer's disease. It has been established from autopsies that the brains of people with severe alcohol dependency are smaller, lighter and exhibit greater atrophy than those of non-alcoholics. Neuropsychological studies of people with chronic alcohol dependence have reported cognitive deficits including problems with problem solving, organising, planning and abstraction (frontal lobe functions); short- and long-term memory loss; and 14 verbal fluency, learning, and visio-spacial perceptions. Impaired co-ordination and balance have also been found (Schneider, *et al*., 2007).

Alcohol influences several neurotransmitter systems, including opiate receptors, gamma-aminobutyric acid (GABA), glutamate, serotonin and dopamine. The increase in opiate levels may explain the euphoric effects of alcohol, while its effects on GABA give it anxiolytic and sedative properties, and induce muscle relaxation and the feeling of intoxication. Alcohol inhibits glutamate receptors and long-term ingestion results in the synthesis of glutamate receptors leading to central nervous system excitability when alcohol is withdrawn (Schukit, 2009). The effects of dopamine in the ventral tegmental area may contribute to the rewarding effect of drinking and the craving as well as behavioural dis-inhibition during drinking (Rodseth, 2012).

2.10.10. Co-morbidity

Psychiatric co-morbidity is common in individuals with a history of alcohol abuse and dependence. Schizophrenia, bi-polar disorder, depression, attention deficit disorder, anxiety disorder and eating disorders have all been associated with the abuse of alcohol, though it is not always clear which condition preceded the other (Schneider, *et al*., 2007).

2.10.11. Depression

According to the WHO Global Status Report on Alcohol (WHO, 2004), there is evidence to assume that alcohol has a causal role in depression. Not only do alcohol dependence and major depression co-occur disproportionately, but also higher volumes of alcohol consumption are associated with more symptoms of depression (Graham, Frost-Pineda & Gold, 2007). While it has often been postulated that people suffering from depression "self-medicate" with alcohol (no doubt in some cases this is true), the question of which precedes the other is not yet fully resolved and/or whether there may be a third variable such as neurobiological mechanisms or genetic predisposition, which causes both to occur (Arch, *et al.*, 2006). Nonetheless, evidence of a causal link from alcohol to depression is growing. Reversibility (remission during abstinence) is a key indicator for causal effect of alcohol dependence on depressive disorder and there is good evidence that abstinence substantially removes depressive disorders within a short time frame (Schneider, *et al.*, 2007).

2.10.12. Alcohol dependence

The ICD-10 defines alcohol dependence syndrome as being a cluster of physiological, behavioural and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value. A central descriptive characteristic is the desire (often strong, sometimes overpowering) or sense of compulsion to take alcohol. In the WHO Global Status Report on Alcohol (2004), of 35 countries reporting levels of alcohol dependence amongst the adult population, South Africa had the highest reported figure, that is, 27.8% of males and 9.9% of females. This should, however, be interpreted with great caution, for example, as instruments and timeframes used were not standardized.

Alcohol is consistently the substance of abuse in people receiving help for substance related problems in South Africa. In the first half of 2005, between 47% (Cape Town) and 74% (Durban) of patients receiving treatment had alcohol as a primary or secondary drug of abuse (Parry, 2005). Although the number of people seeking treatment for alcohol abuse seems to be

decreasing and the number seeking treatment for the abuse of other drugs seems to be increasing, alcohol abuse remains the main reason why people seek treatment. The number of patients older than 20 seeking treatment for alcohol problems is substantially higher than that for younger patients.

2.10.13. Non-natural mortality and morbidity

Unintentional and intentional injuries are responsible for up to 10% of the global burden of disease. Internationally, alcohol use accounts for 13% of DALYs lost due to 15 unintentional injuries and 15% due to intentional injuries (Rehm, *et al.*, 2003). The amount of alcohol consumed is a major determinant of both risk and severity of injury. Alcohol plays a major role in traffic and other accidents, as well as homicides, interpersonal injury and suicide. High rates of alcohol have been found in both the "perpetrator" and the "victim". The largest number of non-natural deaths is South Africa is due to violence (48%) followed by transport fatalities (30%). Both violence and transport deaths are closely linked with alcohol (Plüddemann, *et al.*, 2004; Matzopoulos, 2005; Schneider, *et al.*, 2007).

2.10.14. Alcohol-related mortality

Data from the Non-Natural Mortality Surveillance System (NNMSS) in 2002 indicated that 46% of non-natural deaths in South Africa involved persons with blood alcohol concentrations (BACs) greater than or equal to 0.05g/100 ml (Matzopoulos, Seedat & Cassim, 2003). NNMSS data for 2003 indicated that for all causes of death, 49% had positive BACs and the mean BAC overall was 0.18g/100ml (Harris, Sukhai & Matzopoulos, 2004). Levels of BAC positivity were high for homicides (51% positive, with a mean BAC of 0.17g/100ml), suicides (35% positive, with a mean BAC of 0.15g/100ml) and transport related deaths (53.3%) (Matzopoulos, 2005).

The majority of transport-related deaths in South Africa are of pedestrians (38.8%), followed by unspecified (21%), driver of a motor vehicle (17.7%) and passenger (12.2%) of deaths. While in all categories of transport-related death, high alcohol blood levels was prevalent, this was highest amongst pedestrians (61%). This means that, by far, the largest number of transport-related

deaths in South Africa is of intoxicated pedestrians. Despite this, campaigns almost always focus on drinking and driving and not on drinking and walking!

2.10.15. Alcohol-related trauma

In 2001, 39% of trauma patients in Cape Town, Durban and Port Elizabeth had breath alcohol concentrations (BrACs) greater than or equal to 0.05g/100 ml (Plüddemann, *et al.*, 2004). Levels of alcohol positivity were particularly high for persons injured as a result of violence (73% for Port Elizabeth, 61% for Cape Town and 43% for Durban). In data gathered from a wide variety of facilities in the Cape Metropol, Peden reported that 70% of domestic violence cases were alcohol-related (Peden, 1995). From research conducted by the Department of Transport, the national daily average of persons driving under the influence of alcohol was found to have increased from 1.8% in 2002 to 2.1% in 2003 (Arrive Alive, 2005).

The differences between perpetrator and victim are not always clear. For example, victims may include people involved in fights who happened to be the ones injured or killed, or the drunk driver of a motor vehicle injured or killed in an accident.

2.11. SOCIAL AND PSYCHOLOGICAL IMPACTS

Alcohol consumption can have both social and psychological impacts even though these are more difficult to measure than the physical health impacts. However, one can look at substantive impacts on crime, patterns of interpersonal violence, and family and work problems.

2.11.1. Alcohol and crime

A national study of prisoners and parolees in 1996 found that just under half had taken alcohol or other drugs just prior to the crime for which they were incarcerated (Rocha-Silva & Stahmer, 1996). Drinking was especially linked to rape and housebreaking offences. Subsequent research in Cape Town, Durban and Johannesburg in three phases between 1999 and 2000 (Parry, *et al.*,

2004) found that, overall, 15% of the arrestees were under the influence of alcohol at the time the alleged offence took place. Regarding violent offences, arrestees indicated that they were under the influence of alcohol for 25% of the weapons related offences, 22% of rapes, 17% of murders, 14% of assault cases and 10% of robberies. Levels of alcohol-related crimes were particularly high for family violence offences at 49% (Seedat, van Niekerk, Jewes, Suffla & Ratele, 2009).

Arrestees also indicated that they were often under the influence of alcohol in cases involving property offences. For example, 22% of cases involved housebreaking and 12% of cases involved the theft of a motor vehicle. When asked why they had consumed alcohol or other drugs before committing crimes, many arrestees indicated that they consumed these substances in order to give them courage to commit the crimes (Parry, *et al*., 2004).

2.11.2. Interpersonal violence

Of the approximately 2.1 million cases of crime reported in South Africa between April 2007 and March 2008, "contact" crimes (murder, attempted murder, and rape, assault with intent to inflict grievous bodily harm, common assault, indecent assault, aggravated robbery and other robbery) accounted for 33% of all crimes. While the incidence of all contact crime showed a decrease for 2007/2008 as compared to the incidence for 2006/2007, the incidence of violent crime remains unacceptably high. For example, the murder rate per 100 000 for South Africa is 39 000, ranking 7th highest out of 11 countries (Seedat, *et al*., 2009).

Numerous studies have found an association between alcohol consumption and aggressive behaviour though not everyone who consumes alcohol gets aggressive. People with anti-social personality disorders appear to be particularly susceptible to alcohol-related aggression. People who have previously been violent under the influence of alcohol are the most likely to become aggressive when drinking again. Internationally, alcohol has been associated with numerous acts of interpersonal violence which include physical and sexual abuse, emotional and psychological abuse and neglect (Seedat, *et al*., 2009; Setlalentoa, *et al*., 2010).

Various categories of criminal behaviour have been identified as having links to drinking and driving, homicide, domestic violence, other assaults, sexual violence and child abuse. A strong link between alcohol use, crime and violence has been established by meta-analysis, with between a quarter and half of homicides or purposeful injury having shown to be attributed directly to alcohol use (English, Holman, Milne, Hulse & Winter, 1995; Single, Robson, Xie & Rehm, 1998). McClelland and Teplin, (2001) directly observed 2365 police-citizen encounters in the USA. Overall, 34% of these encounters were judged to be alcohol-involved, with the following percentages reported: violent crime and sexual assault (43%), spousal assault (43%), robbery (39%), public order/vandalism (46%) and other non-violent encounters (23%).

2.11.3. Family and work problems

Drinking can impair one's functioning as a parent, as a spouse and as a contributor to the running of a household (Mulaudzi, 2003). Drinking requires time (often spent with drinking colleagues) and this competes with time needed to carry on family life (e.g. time spent with children, doing household chores etc.).

Drinking money often takes precedence over other household needs, often leaving the family unable to afford even basic goods and services. Drinking leads to a spiral of poverty in which the drinking behaviour inhibits income capacity (through absenteeism, lack of motivation, poor quality of work, loosing employment) while any income earned is then spent on drink – at times to drown sorrows related to not having work or only having a poorly paid job. A study in Delhi, India, compared families where the husband drank at least three times a week to those where the husband drank only once a month. In the first group 24% of household income was spent on alcohol compared with 2% in the other families. The family with the drinker had significantly more debts (60% vs. 42%) and these debts were twice as large (Mulaudzi, 2003; Mothiba & Malema, 2009).

While continuing patterns of drinking threaten family subsistence, events that take place when a family member is intoxicated can also have lasting consequences – mainly through injuries and

family violence. The psychological toll on the family is often great. For example, in interviews with family members of heavy drinkers in Mexico, 73% reported feelings of anxiety, fear and depression, 62% reported physical or verbal aggression, and 31% reported family disintegration. For many mothers, the inability of the fathers to bring in adequate incomes to feed and clothe their children owing to their drinking habits, leads to depression in the mothers (Mulaudzi, 2003; Mothiba & Malema, 2009).

Violence against women and children often has severe psychological consequences for the victims (WHO, 2001). Alcohol can impair work performance through decreased efficiency and it can lead to poor workplace safety. For example, intoxication can result in errors of judgement, accident proneness and putting the lives of others at risk. Alcohol misuse also results in greater absenteeism from work and increases the risk of dismissal from work. In Costa Rica it was found that 30% of absenteeism and workplace accidents were caused by alcohol dependence. In India 15-20% of absenteeism and 40% of accidents were due to alcohol. Among Grades 8 and 11 learners in Cape Town, a significant association was found between past month use of alcohol and the number of days absent from school and repeating a grade. The odds of repeating a grade were 60% higher for learners who consumed alcohol. Whether this relationship was causal, or occurred through another factor was not established (Peltzer, Cherian & Cherian, 1999b).

2.12. SPECIAL AREAS OF CONCERN IN SOUTH AFRICA

Two areas regarding alcohol in South Africa need special mention. These are the Foetal Alcohol Syndrome (FAS) and HIV/AIDS.

2.12.1. Foetal Alcohol Syndrome (FAS)

Heavy alcohol intake during pregnancy, usually in a binge drinking pattern, occurs in over 20% of women in the Western Cape (Croxford & Viljoen, 1999). Drinking during pregnancy remains

a problem despite considerable media attention efforts by the national government to limit alcohol harm and isolated initiatives to increase universal and other preventive activities in these provinces (Chersich, Urban, Olivier, Davies, Chetty & Viljoen, 2012). Drinking alcohol during pregnancy may lead to damage to the foetus. This could be in the form of Foetal Alcohol Effects or full-blown Foetal Alcohol Syndrome (FAS). FAS is characterized primarily by damage to the brain and the central nervous system, which results in hyperactivity, attention problems, learning disabilities (e.g. problems of memory, abstract reasoning), lack of judgement and fits. Other organs such as the heart and kidneys, as well as growth may be affected. There is no cure for FAS, and most FAS children are unable to cope with normal schooling (May, Brooke, Gossage, Croxford, Adnams, Jones, Robinson & Viljoen, 2000). Moreover, many FAS children are part of "alcoholic families" who are unable to give them the special care and attention they need. The result is that many FAS children drop out of school early, are not easily employable and are susceptible to gangs, crime and peer-pressure (Croxford & Viljoen, 1999; Viljoen, Craig, Hymbaugh, Boyle & Blount, 2003).

South Africa has the highest reported rate of FAS in the world. (It must be noted though that poorer countries have never conducted epidemiological research into FAS and thus rates in these countries are not known). Other studies have also found that FAS is higher with higher levels of FAS in the Western and Northern Cape than anywhere in the world (Olivier, Urban, Chersich, Temmerman & Olivier, 2013). In poorer areas of the Western Cape the prevalence of FAS among Grade 1 learners was found to be 46 per 1000 in 1997 and this increased to 75 per 1000 in 1999. In the Northern Cape rates of 103 and 75 per thousand were found in different areas. Prevalence in three poor areas in Gauteng found rates of 12, 22 and 37 per 1000. While the Gauteng rates were lower than those of areas in the Cape, they are still far higher than even the most at risk communities in developed countries, such as the urban poor or native settlement areas in the USA. In studies in the USA and France, rates of 0,5 and 3,0 per 1000 were found. Mothers who drink alcohol in a binge fashion while pregnant and exceed 5 drinks per week per occasion, that is, more than 90mls of absolute alcohol, are especially at risk for FAS. Thus, one heavy bout of drinking may be enough to cause FAS (May, 1995).

2.12.2. Risky sexual behaviour

The misuse of alcohol is increasingly being recognised as a key determinant of risky sexual behaviour, and, consequently, an indirect contributor to HIV transmission in sub-Saharan countries. According to Morojele, *et al*. (2004), numerous cross-sectional investigations conducted among adults in this region have shown consistently that alcohol use is associated with HIV infection as well as with risky sexual behaviours, such as having multiple sexual partners (Mnyika, Klepp, Kvale & Ole-Kingori, 1996; Mbulaiteye, Ruberantwari, Nakiyingi, Carpenter, Kamali & Whitworth, 2000; Campbell, Williams & Gilgen, 2002; Hargreaves, James, Morrison, Chege, Rutenberg, Kahinde, Hayes & Buve, 2002; Fritz, Woelk, Bassett, McFarland, Tobaiwa & Stall, 2002; Clift & Barrett, 2003, Mnyika, Klepp, Kvale & Ole- Kingori, 1997; Trigg, Peterson & Meekers, 1997).

Three different but related explanations are proposed to account for the relationship between alcohol use and risky sexual behaviour. First is the argument that alcohol consumption may represent other behavioural, lifestyle, contextual and/or personality factors which are associated with engagement in high-risk sexual behaviour (Hargreaves, *et al*., 2002). Secondly, ethanol acts on the central nervous system, reduces inhibitions, and, consequently, increases people's likelihood of engaging in risky sexual and other behaviours. Thirdly, people's alcohol expectancies, that is, their expectations about how alcohol will influence their behaviour, can also influence their actual behaviour (Brown, Christiansen & Goldman, 1987).

In both qualitative and quantitative studies conducted by Morojele, *et al*. (2004) in a black township in South Africa among adults between the ages of 22 and 45 it was found that there were strong relationships between various measures of alcohol use and risky sexual behaviour. In this quantitative study, two main types of effects that alcohol consumption may have on sexual behaviour were identified, that is, drinking seems to increase the appeal of sexual episodes and it reduces people's control with respect to sexual encounters. The variables which were found to be associated with the reported increased sexual appeal owing to drinking were being young, not being married, being employed, drinking more, being a problem drinker, having more sexual partners and engaging in regretted sex (Mbulaiteye, *et al*., 2000; Kalichman & Simbayi, 2004).

This profile seems to suggest that inexperienced, younger, heavier drinking adults are at greatest risk of having alcohol-related risky sexual encounters. Those who reported being less able to have control over their condom use after drinking were less likely to have used condoms in their lifetimes. It seems that those who were usually not inclined to use condoms might have become even less inclined to use them after drinking. However, other individuals who were most strongly committed to condom use became even more vigilant when drinking (Kalichman & Simbayi, 2004).

Men appear to be at greater risk of engagement in alcohol use-related risky sexual behaviour than women. Men are also more likely to report that they engage in sex under the influence of alcohol, that drinking increases their desire to have sex with a casual partner and that drinking worsens their ability to resist unwanted sexual advances (Kalichman & Simbayi, 2004).

2.13. SCREENING FOR RISKY DRINKING

Screening for risky drinking should be routine in primary health care clinic practice in order to prevent alcohol-related problems before they become disabling and more difficult to manage. Early identification of alcohol-related problems is important because these problems are prevalent, pose serious health risks to patients and their families, and are amenable to intervention. Brief intervention may help patients to change their behaviour. Recording the history of the patient's drinking behaviour in order to identify patterns of alcohol-related difficulties with physical and mental health, family life, legal authorities and employment, can be the most effective tool for screening (Burge & Schneider, 1999).

Research indicates that after personal reflection about the negative consequences of alcohol misuse, many drinkers reduce their drinking without formal treatment. Health care providers in primary health care clinic settings can help prevent the serious effects of alcohol-related problems by stimulating such reflection and moving patients toward healthier lifestyles (Burge & Schneider, 1999).

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

Most problem drinkers are employed, employable, or in families, indicating that the scope of the problem extends far beyond those who meet the formal diagnostic criteria. Therefore, in a primary health care clinic setting, one first identifies and then helps the patient understand and acknowledge the consequences of drinking, the presence of a problem, and the need for intervention.

Screening questionnaires

A variety of screening procedures that are intended to aid in the detection of people with harmful and hazardous alcohol consumption in clinical and primary health care clinic settings have been devised e.g. the 25-item MAST and CAGE test (WHO, 1996; Edwards, *et al.*, 1997; Cherpitel, 1997). These tests generally tend to pick up the more extreme rather than the easy cases. The MAST test, for instance, has among its items delirium tremens and hospital admission for drinking. However, the tests show remarkably good sensitivity and specificity for excessive drinking and alcoholism (Edwards, *et al.*, 1997). Thus, such instruments are of value for routine screening in a hospital setting. Questionnaires may be of value in a primary health care clinic. However, these tests, in general, have found more application as research tools than in the front line medical and social setting where paper and pencil tests provide no substitutes for vigilance, sympathetic questioning and the real skills needed for identifying drinking problems of all degrees, types and concealment (Edwards, *et al.*, 1997).

The Alcohol Use Disorder Identification Test (AUDIT) was developed by an international group of investigators at the request of the World Health Organization. Its aim is to identify problem

drinkers in primary health care clinic settings. It was designed for use by health care workers in developed and developing countries. AUDIT was designed specifically to detect problem drinkers rather than alcoholics by placing emphasis on heavy drinking and frequency of intoxication rather than signs of dependency (Haggerty, 1994). AUDIT is useful in screening for both currently harmful and potential hazardous drinking and has demonstrated high sensitivity and specificity, and it can identify mild dependence. Potentially, this is the screening questionnaire that should be of value to clinicians and researchers in the primary health care clinic in the future (Edwards, *et al.*, 1997; Cherpitel, 1997). The questions refer to lifetime alcohol experiences, as well as those in the past year, thus distinguishing between current and previous problems (Haggerty, 1994).

2.14. TREATMENT

The fact that the annual increase in new alcoholics is greater than the number who are successfully treated, and that it is from the population of non-problem drinkers that new problem drinkers emerge, requires society to make an effort to prevent alcohol abuse among people who are not experiencing any alcohol-related difficulties.

2.14.1. Primary prevention

Efforts are intended for individuals who drink alcoholic beverages but do not have alcohol-related problems, and those people who do not yet drink alcohol. The goal of prevention is to reduce the possibility of drinking problems occurring. It also involves identifying groups at increased risk including professionals, executives, young people, and women, especially those of childbearing age, and the elderly, as well as those with depression, other drug use or a family history positive for alcoholism (Edwards, *et al.*, 1997).

2.14.2. Secondary prevention

Intervention focuses on alcohol users whose drinking is causing problems, and attempts to keep these problems from becoming severe.

2.14.3. Tertiary prevention

The treatment deals with drinkers and alcoholics who are experiencing severe problems as a result of their drinking. The goal of treatment is to help these individuals stop drinking and return to a productive life (Edwards, *et al*., 1997).

2.15. INTERVENTION

Alcohol use is associated with tremendous costs to the drinker, those around him or her, and society as a whole. These costs result from the increased health risks (both physical and mental) associated with alcohol consumption, as well as from the social harm caused by alcohol. To reduce alcohol's impact on the burden of disease, as well as on other social, legal, and monetary costs, therefore, it is imperative to develop effective interventions that can prevent or delay initiation of drinking among those who do not drink, particularly adolescents, and limit consumption to low-risk drinking levels among those who do consume alcohol.

The main goal is to make problem drinkers aware of the connection between their drinking and their physical health, personal relationships, job performance and circumstances. Many problem drinkers attempt to deny these connections and they may not be desperate enough to seek help on their own. In the light of this resistance, intervention is tailored to the individual and his or her circumstances (Edwards, *et al*., 1997).

Sometimes, confrontational intervention treatment presents the problem drinker with clear evidence of his or her self-destructive behaviour. The confrontation might be produced by a spouse who threatens divorce, by an employer who threatens a loss of job or by a physician who points out the profound medical consequences of continued drinking. Such confrontations are

frequently successful in moving the problem drinker into action. In general, the earlier that intervention takes place in a drinking career, the more successful it is (Edwards, *et al*., 1997).

Current knowledge holds that the earlier the intervention in a potentially troublesome drinking career, the better the chances of reversing the trend and overcoming the problems. It is not the sole responsibility of teachers, employers or professional counsellors to carry out interventions, a remark by a friend or family members can help alert the person to the knowledge and concern that other people have about his or her drinking behaviour. Sometimes a single-session intervention might not have a successful impact; it might take several interventions before a person begins to take action. This is mainly because, when people are confronted with an aspect of their behaviour they do not wish to recognize, they often deny that it exists at all. This initial denial is often a reflection of an unconscious attempt to minimize a problem's significance and protect the ego against criticism. With sensitive, caring and supportive intervention the problem drinker will eventually feel comfortable enough to admit that he or she is having an alcohol-related problem (Fishman, 1992).

2.16. BRIEF INTERVENTION FOR ALCOHOL PROBLEMS

This section addresses the effectiveness of brief intervention and implementation in the health sector. Brief interventions are characterized by their low intensity and short duration and usually comprise one to three sessions of counselling and education. The goal is to provide early intervention. The assumption underlying screening and brief intervention in primary health care clinics is that, for identified risky drinkers, reducing overall alcohol consumption or adopting moderate drinking patterns will reduce the risk of medical, social, and psychological problems (WHO, 1996).

The effectiveness of brief intervention for risky drinkers

Brief interventions for reducing their levels of alcohol consumption and alcohol-related harm have been developed and implemented in many countries (Pennings, Leccese & Wolf, 2002).

These seek to change views of personal acceptability of excessive drinking and to encourage self-directed behaviour change. They include simple forms of structured advice and brief counselling (Whitlock, Polen, Green, Orleans & Klein, 2004). Easy access to these interventions is possible as they can be delivered by a wide range of generic practitioners (Grothues, Bishof, Reinhardt, Meyer, John & Rumpf, 2008).

An international evidence-based research has accumulated data for more than 20 years, with efficacy data originating mainly from English-speaking countries. Reductions in the volume of alcohol consumed are typically about 10-15% (Pennings, *et al*., 2002) and reductions in the proportions of hazardous drinkers are between 10-19% (Bien, Miller & Tonigan, 1993) following brief intervention. Reductions in alcohol problems of a similar magnitude and in health service utilization have also been identified (Wilk, Jensen & Havinghurst, 1997; Emmen, Schippers, Bleijenberg & Woller, 2004). Motivational Interviewing (MI), defined as "a facilitative, patient-centred counselling style for helping people explore and resolve ambivalence" (Fleming, *et al*., 1997), has become increasingly prominent within this literature.

Opportunistic screening and brief intervention (SBI) has been shown to be effective and cost-effective in reducing the health and social problems that result from excessive drinking (Anderson, 1993; Wilk, *et al*., 1997). In addition to providing health gains for patients, SBI may reduce societal costs of excessive drinking and result in economic gains for health services (Moyer, Finney, Swearingen & Vergun, 2002; Fleming, Mundt, French, Manwell, Stauffacher & Barry, 2003). Brief interventions have been viewed as having the most promise for treatment of individuals whose alcohol problems are in the mild-to-moderate range of severity. Accordingly, brief interventions may have their greatest public health influence in primary and secondary prevention efforts (Heather, 1995; Heather, 2002; Freyer-Adam, Coder, Baumeister, Bischof, Riedel, Paastsch, Welder, Rumpf, John & Hapke, 2008). A number of clinical trials for brief interventions for alcohol problems have been conducted in the primary health care clinic setting, where individuals are treated for medical problems that may be caused or exacerbated by the excessive use of alcohol (Fleming, *et al*., 1997; Parish, 1997). There is substantial evidence supporting the efficacy of brief intervention in reducing heavy drinking.

Heather (1986) reported a study whose subjects were recruited from newspaper advertisements, that sought people who considered themselves to be heavy drinkers. The purpose of the study was to compare the effectiveness of a self-help manual designed to help people to cut down their drinking with a simple information booklet. The author found that the group who received the self-help manual reported a significantly greater reduction in the previous week's mean alcohol consumption of the six-month follow-up than those who had been given the booklet. However, this difference was not maintained at the one-year follow-up.

In another study which used the media to recruit subjects, Sanchez-Craig, Spivak and Davila (1991) explored whether additional interpersonal contact was more effective than giving health-related literature on its own. It evaluated the effects of personal counselling and counselling when combined with two types of reading materials on patterns of alcohol consumption. It was found that, after one year, all groups reported a significant reduction in the mean number between the groups.

No control groups were used in the studies reported by Heather (1986) or by Sanchez-Craig, *et al*., (1991). Consequently, the extent to which the interventions (as opposed to any confounding variable) influenced the outcome cannot be assessed. Anderson and Scott (1992) found, in their controlled study of the effectiveness of minimal intervention by general practitioners, that statistically significant improvements were demonstrated one year after patients had been given simple advice about their alcohol consumption by their general practitioners. The effectiveness of minimal intervention approaches for problem drinkers in general hospital wards has also been demonstrated (Chick, Lloyd & Crombie, 1985; Babor & Grant, 1992).

In a study conducted by Chick, *et al*., (1985) the intervention consisted of a one-hour counselling session supplemented with an information booklet. One year later, statistically significant reductions in alcohol consumption were reported by both the control and treatment groups. The treatment group reported significantly fewer alcohol-related problems than the controls, and the

results were supported by changes in the results of liver function tests. All patients who were recruited to the study were males under 65 years of age and were either in employment or had recently been employed.

By excluding women, unemployed men and those over 65 years, the study failed to address the effectiveness of such interventions for a relatively large proportion of the general hospital patient population. Both the screening procedure and interventions were carried out by a nurse who was a specialist practitioner with considerable experience in counselling problem drinkers. It may be that such effects would not have been found if the interventions had been delivered by general nurses who work in acute care hospital wards and are able to spend as much time (i.e. one hour) in discussing issues relating to alcohol consumption as was given to the participants of the study.

A large international study of brief interventions for alcohol problems was conducted by a team of researchers in ten countries. The study was co-ordinated by the World Health Organization (Babor & Grant, 1992). One thousand six hundred and fifty five subjects were recruited from a variety of settings which included general hospital wards, emergency departments, primary health care clinics (PHC), health screening agencies, educational institutions and the workplace. Following recruitment to the study, subjects were assigned to one of three experimental groups for treatment: (i) a control group who received no treatment; (ii) a group who were given five minutes of simple advice about drinking; and (iii) a group (brief counselling condition) who were given more extensive advice in a 20 minute counselling session and a 30 page problem-solving manual about controlled drinking. Reductions in reported levels of alcohol consumption were seen in all groups, with the exception of the 'simple advice' group in two of the ten countries, and in a control group in one country. It appears that brief intervention may have a place in the repertoire of treatment modalities for problem drinkers.

Watson (1996), in another study, assessed the effectiveness of brief interventions, administered by a general hospital nurse, in an acute care setting, to help a sample of at-risk problem drinkers to achieve a reduction in alcohol consumption. The study evaluated the effectiveness of giving:

(i) a booklet containing information about sensible drinking limits, how to calculate consumption in standard units and suggestions about how to reduce consumption; (ii) the information as described in the booklet, but in a one-to-one personal interaction; (iii) a combination of the information in the booklet and the advice; and (iv) no treatment.

It was found that after one year, there was no significant difference in the levels of any of the outcome measures in those four groups. The results of this study did not show conclusive effects of minimal intervention. The study found that all groups reported lower levels of alcohol consumption in follow-up sessions. This finding is not confined to this study as reductions in mean drinking levels of the control group, as well as of the treatment group, was a feature in many of the studies of minimal interventions for problem drinkers (Chick, *et al*., 1985; Babor & Grant, 1992; Anderson & Scott, 1992).

The fact that there were highly significant reductions reported at the one-year follow-up for the entire sample, including the control group, for the mean levels of consumption, number of reported alcohol problems and the levels of both liver enzymes, could be because the detailed inquiry into drinking behaviour of the screening procedure acted in itself as an intervention. Its effect was to raise awareness of potentially harmful levels of alcohol consumption. This suggests that simply asking patients about alcohol consumption may act as an intervention in its own right. It could be that talking in detail with patients about the amount they drink at a time when they are unwell and, therefore, perhaps more sensitive to issues which relate to their health, is sufficient to encourage them to consider the implications of their drinking on their health.

2.17. IMPLEMENTING INTERVENTIONS

Intervention can best be implemented in the health sector. Parry and Bennetts (1998) note that "the first step is to identify alcohol problems at the primary health care clinic level." Health workers need to ask patients about their drinking practices in a way that will elicit honest answers. Secondly, there is a need to institute brief interventions for heavy drinkers at the

primary health care clinic level. There is no referring here to 'alcoholics'. Research in this area has been undertaken by the WHO in various developing countries, including Zimbabwe. This research has stressed that the target should be on consumption of alcohol itself and the focus should be on responsible drinking rather than on abstinence.

Two strategies have been proposed, namely giving brief interventions in the form of five to ten minutes of giving advice and issuing leaflets. The advice should focus, for example, on encouraging people to drink more slowly, to drink smaller quantities each time and on how to avoid intoxication. Brief intervention usually takes longer and comprises a form of condensed cognitive-behavioural therapy that includes the use of a self-help manual as well as follows visits (Parry & Bennetts, 1998).

WHO (2002) notes that in primary health care clinics, hazardous and harmful drinkers present themselves for treatment twice as often as other patients and may constitute 20% of the patients on a practice list. However, alcohol problems are responsive to early and brief intervention in primary health care clinics. A number of randomized controlled trials have shown that, in comparison with controls, hazardous and harmful drinkers receiving five to ten minutes of brief structured advice plus a self-help booklet from primary health care clinic workers will reduce alcohol consumption by an average of 25%. Primary health care clinics are a particularly valuable point of contact for the delivery of brief interventions because of the large proportion of the population who access primary health care services each year. Overall, it has been estimated that around 20% of patients identified as hazardous or harmful drinkers who receive a brief intervention will reduce their alcohol consumption.

Alcohol policy

The White Paper for Transformation of the Health System in South Africa, 1997 and the National Drug Master Plan, 1999 in South Africa have prioritized prevention and management of alcohol abuse and the integration of substance abuse in primary health care. The Department of Health (2001) has included in the service description of clinics the prevention and management

of substance abuse. Standards for PHC include health-learning materials on alcohol in local languages and competence of health staff in identifying alcohol abuse and providing basic counselling for behaviour changes and referral to NGOs specialising in substance abuse.

The Department of Health (1996) has also produced a primary health care clinic Mental Health manual, which includes a section on substance abuse and alcoholism. In 2001, the Department of Health trained trainers from all provinces on the prevention and management of substance use in primary health care. The training included the basics of early identification with the CAGE or AUDIT and brief intervention of alcohol problems. Consequently, various training workshops have been conducted on the prevention and management of substance abuse for multidisciplinary Primary Health Care staff in the provinces of South Africa.

Brief intervention is generally restricted to four or fewer sessions, each session lasting from a few minutes to an hour. The intervention is designed to be conducted by health professionals who do not specialize in addiction treatment. It is most often used with patients who are not alcohol dependent, and its goal may be moderate drinking rather than abstinence (NIAAA, 1999). However, when used for alcohol-dependence the goal is abstinence. Brief intervention has been used to motivate alcohol-dependent patients to enter specialised treatment with the goal of abstinence. Research indicates that brief intervention for alcohol problems is more effective than no intervention and often as effective as more extensive intervention (WHO, 1996).

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

This section presents the research methodology used when conducting the study. The first part describes the randomized control trial and its functions. This is followed by the description of the target population, sample and sampling procedure, instrument and data collection methods. This is followed by a description of how the data was analysed and the ethics observed while conducting this study.

3.2. RESEARCH DESIGN

Research design is a plan or blueprint of how a researcher plans or intends to conduct a study (Babbie & Mouton, 2001). It includes the methods and techniques used to collect, analyse and interpret data (Leedy & Omrod, 2001; Weiten, 2011). There are two major approaches to research, namely qualitative and quantitative approaches.

Qualitative research relies on language and the interpretation of its meaning. Data collection methods are dependent on the participants and do not involve testing of the hypothesis. Quantitative research data, however, is collected in order to determine numbers based on hypothesis testing (Creswell, 2003; Weiten, 2011). This study evaluates the effectiveness of the screening and brief intervention approaches concerning risky alcohol drinkers. The quantitative approach is more relevant to this study than the qualitative approach.

In this study, the researcher used the quantitative approach, which is a method that produces numerical data (Black, 1999). According to Thompson and Panacek (2006), scientific research is more thorough and the findings are more reliable when experiments have been used. Another advantage of using experiments is that if one wants to study the impact of an intervention on

human behaviour, experiments yield reliable data that can be repeated with more or less the same results (Weiten, 2011).

3.2.1. Experimental design

Experimental design is a research design where the researcher selects a group of subjects, does something to them, and observes the effects of what was done (Babbie & Mouton, 2001; Leedy & Omrod, 2001; Weiten, 2011). In experimental research, there are three major pairs of components, namely the independent and dependent variable; pre-test and post-test; and the experimental and control groups.

An experiment is defined as the collection of comparative data under controlled conditions (Jadad, 1998; Weiten, 2011). According to Kirk (1982), two of the distinguishing characteristics of an experimental design are the presence of one or more control groups, and the random assignment of participants to the experimental and control groups. In experimental research, the researcher controls and manipulates the independent variable in some way, in order to observe the effects of that manipulation on the dependent variable (Leedy & Omrod, 2001; Weiten, 2011). In a way, this compromises the control group in the sense that they are not receiving the manipulation on the independent variable.

The main characteristic of experiments is that they involve identifying and isolating individual aspects of a situation, making changes and observing the effects in detail. They are ideal for testing a hypothesis, and the basic aim of an experiment is to test the impact of an intervention on the outcome (Creswell, 2003; Weiten, 2011).

There are two types of experimental design, namely true experimental design and quasi-experimental design (Bennet, 2003; Weiten, 2011). The true experimental design uses a matched control and experimental group, and their equivalence is achieved by allocating numbers randomly to either group. In quasi-experimental design, however, this is not the case; non-equivalent groups are used.

The major strength of using a true experiment or randomized control trial is that it is able to hold all other extraneous variables constant, and to vary only those factors of interest. This enables researchers to determine with confidence whether the effects observed are due to the factors that have been manipulated, though it is not always possible for a researcher to have control over participants. The strength of the experimental design is that participants can be randomly assigned to conditions to rule out other rival hypotheses, but the major weakness of a true experimental design is matching the control and experimental groups, which is not always easy (Bennet, 2003; Weiten, 2011). In this study, a randomized control trial was used and is discussed in the following section.

3.2.2. Randomized control trial

A randomized controlled trial is defined as a study in which people are allocated at random (by chance, like the flip of a coin alone) to receive one of several clinical interventions (Jadad, 1998). One of these interventions is the standard of comparison or control. The control may be a standard practice, a placebo ('sugar pill'), or no intervention at all. Randomized controlled trials seek to measure and compare the outcomes after the participants have received the interventions. Because the outcomes are measured, randomized controlled trials are quantitative studies (Jadad, 1998).

After recruiting a total group of subjects, the researcher may randomly assign those subjects to either the experimental or control group (Babbie & Mouton, 2001; Weiten, 2011). In this study, the randomized control trial was used as the study aimed at evaluating the effectiveness of an intervention method (BI) for risky drinkers. A randomized control trial allows a researcher to compare two groups before intervention and after intervention to determine whether the intervention done had any impact and also to show if it can be used as an intervention method.

In this study, after the researcher had conducted the screening (pre-test), that is the administration of an AUDIT questionnaire, participants were randomly assigned to two groups, the experimental group and the control group. The experimental group was exposed to brief intervention, while the

control group was not. The control group received no intervention and was provided with only an information leaflet on cutting back consumption. Between the pre-test and post-test of participants, the experimental group received brief intervention and then after a period of six months, a post-test re-administration of the AUDIT questionnaire was done. This was done to compare the change in drinking behaviour in both groups prior to intervention and post intervention for the experimental group at Time 1 and Time 2 and for the control group at Time 1 and Time 2.

Jadad (1998) argues that Randomized Control Trials are quantitative, comparative, controlled experiments. The RCT is one of the simplest and most powerful tools in clinical research (Stolberg, Norman & Trop, 2004). RCTs are considered the most reliable form of scientific evidence because they eliminate all forms of spurious causality (Jadad, 1998). RCTs are mainly used in clinical studies but are also employed in other sectors such as judicial, educational and social research (Stolberg, *et al.*, 2004). Clinical RCTs involve allocating treatments to subjects at random. This ensures that the different treatment groups are 'statistically equivalent'.

The randomization procedure gives the randomized controlled trial its strength. Random allocation means that all participants have the same chance of being assigned to each of the study groups. The allocation, therefore, is not determined by the investigators, the clinicians, or the study participants (Jadad, 1998). The purpose of random allocation of participants is to ensure that the characteristics of the participants are as likely to be as similar as possible across groups at the start of the comparison (also called the baseline). If randomization is done properly, it reduces the risk of a serious imbalance in known and unknown factors that could influence the clinical course of the participants. No other study design allows investigators to balance these factors.

In essence, the randomized controlled trial is a study in which people are allocated at random to receive one of several clinical interventions (Jadad, 1998). On most occasions, the term "intervention" refers to treatment, but it should be used in a much wider sense to include any clinical manoeuvre offered to study participants that may have an effect on their health status.

Such clinical manoeuvres include prevention strategies, screening programmes, diagnostic tests, interventional procedures, the settings in which health care is provided, and educational models (Jadad, 1998).

Randomized controlled trials are used to examine the effect of interventions on particular outcomes such as death or the recurrence of disease. Some consider randomized controlled trials to be the best of all research designs, or "the most powerful tool in modern clinical research", mainly because the act of randomizing patients to receive or not receive the intervention ensures that, on average, all other possible causes are equal between the two groups. Thus, any significant differences between groups in the outcome event can be attributed to the intervention and not to some other unidentified factor (Stolberg, *et al*., 2004).

However, randomized controlled trials are not an answer to all clinical questions. For example, the effect of a risk factor such as smoking cannot ethically be addressed with randomized controlled trials. Furthermore, in many situations randomized controlled trials are not feasible, necessary, appropriate or even sufficient to help solve important problems (Jadad, 1998; Stolberg, *et al*., 2004). Randomized controlled trials are not appropriate for cancer screening, a situation in which the outcome is rare and frequently occurs only after a long delay. Thus, although the test for appraising the ultimate value of a diagnostic test may be a large well-designed randomized controlled trial that has patient outcomes as the end point, the trial should presumably be performed after other smaller studies have examined the predictive value of the test against some accepted standard (Jadad, 1998; Stolberg *et al*., 2004).

3.2.3. Randomized Controlled Studies

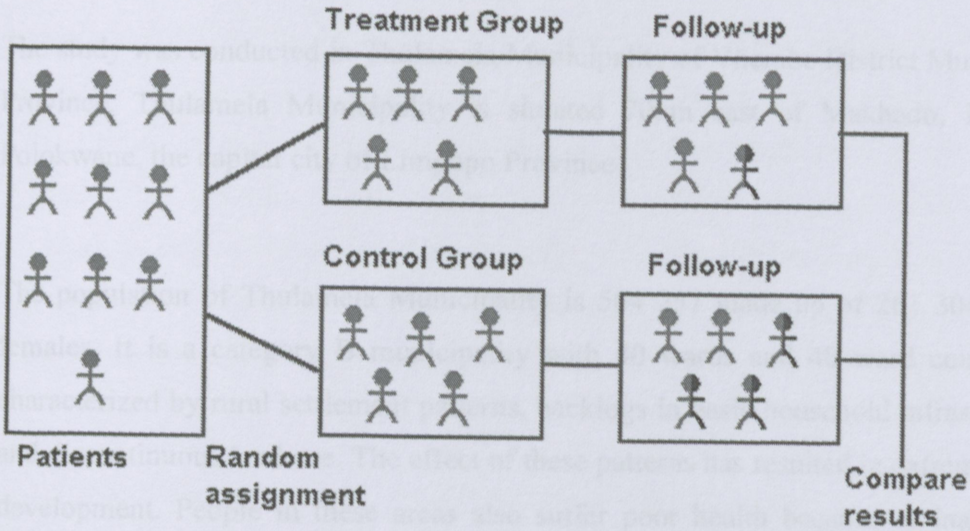

Figure 3.1. The process of a randomized control trial

A randomized controlled study is one in which:

1. There are two groups, namely one treatment group and one control group. The treatment group receives the treatment under investigation, and the control group receives either no treatment or some standard default treatment.
2. Patients are randomly assigned to all groups.

Assigning patients at random reduces the risk of bias and increases the probability that differences between the groups can be attributed to the treatment. Having a control group allows researchers to compare the treatment with alternative choices. For instance, the statement that a particular medication cures 40% of the cases tells very little unless researchers also know how many cases get better on their own (or with a different treatment).

Randomized controlled trials are the standard method of answering questions about the effectiveness of different therapies. If a researcher has a therapy question, he or she should first look for a randomized controlled trial, and then go on to look for other types of studies only if one is not found.

3.3. LOCATION OF THE STUDY

The study was conducted in Thulamela Municipality of Vhembe District Municipality in Limpopo Province. Thulamela Municipality is situated 70km east of Makhado, 180km north east of Polokwane, the capital city of Limpopo Province.

The population of Thulamela Municipality is 584 257 made up of 261 304 males and 322 953 females. It is a category B municipality with 40 wards and 40 ward councillors. The area is characterized by rural settlement patterns, backlogs in basic household infrastructure and services, and discontinuous land use. The effect of these patterns has resulted in extreme poverty and under-development. People in these areas also suffer poor health because of inadequate housing and health facilities. Thulamela Municipality is divided into two geographical areas, namely Thohoyandou and the surrounding rural settlement, and Malamulele (and the surrounding areas). The largest portion of the population is of school going age. Even though Thulamela has many people with different cultures and languages, the predominant cultures are those of the Tsonga/Shangaan and VhaVenda people which have a unique but unified history.

The study was conducted at a primary health care clinic, namely, Sibasa clinic in the Thulamela Municipality. The Vhembe District Municipality health services are offered in the following health establishments:

a) One regional hospital;
b) Six district hospitals;
c) One hundred and ten clinics;
d) Three get away clinics;
e) One health information centre;
f) Nineteen mobile clinics.

3.4. POPULATION

A population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying (Babbie & Mouton, 2001). The population of this study was comprised of people who arrived to consult health professionals at Sibasa clinic for any physical ailments. The people were interviewed by the researcher using the Alcohol Use Disorder Identification Test (AUDIT) to determine whether they were risky drinkers, in order to be included in the study. The risky drinkers were those who had a score of 8-19 on the AUDIT questionnaire. The population of this study (N=140) consisted of 105 males between the ages of 20 and 47 and 35 females between the ages of 21 and 40 at baseline.

At post-test, the population (N=132) comprised 98 males between the ages 20 and 47 and 34 females between the ages of 21 and 40. This study was part of the bigger Screening Brief Intervention project that was conducted in Limpopo Province. The study was approved by the University of Venda School of Health Sciences Research and Publication Committee and Senex. Permission to conduct the study was granted for the bigger Screening Brief Intervention project by the provincial Department of Health, and local health authorities. In this study the permission for the larger study was used. Ethical clearance was obtained for this study from the University of Venda Ethics Committee.

3.4.1. Sampling procedure

Sampling is a process used to select cases for inclusion in a research study. Shipman (1988:52) define sampling as "a systematic way of choosing a population small enough to study and large enough to be representative". The main aim of sampling is to save time, effort and to obtain consistent and unbiased estimates of the population status in terms of what is being researched.

There are two main types of sampling methods, each with different subtypes: probability and non-probability sampling (Babbie & Mouton, 2001). In probability sampling, each element of the population has the same known equal chance of being chosen at random and has the same

known equal probability of being selected. In non-probability sampling, however, the chance of selection for each element is unknown and for some elements the chance is zero (Bless & Higson-Smith, 2000; Strydom & Venter, 2002). A sample is taken to enable a researcher to learn more about the population from which that sample has been drawn because it is impossible to study the entire population.

This study used an experimental design which involved patients at Sibasa clinic being selected and randomly assigned to either the experimental group to receive the experimental alcohol intervention or to the control group to receive information leaflets and no intervention. The researcher administered the AUDIT questionnaire to screen participants. Following informed consent and completion of baseline assessment prior to intervention, the researcher drew a randomly computer-generated group assignment in a sealed envelope to determine under which experimental group each participant should fall. The two groups to which they were put were the SBI experimental group and the control group (receiving information leaflet on cutting back). Random assignment occurred following the baseline assessment.

Participants who met the criteria were asked to participate in the study. Criteria for inclusion in the study were that prospective participants had to be over 18 years old, that they had to be both males and females, and that after screening, should have scored between 8 and 19 on the AUDIT questionnaire. Those who scored 20 or more on the AUDIT were referred to the hospital for further management.

3.4.2. Sample size

A sample is defined as a small subgroup of a population or representative group of people selected from the population the researcher is interested in studying (Babbie & Mouton, 2001). The size of the sample depends on the type of study. In experimental designs, for example, only a few participants can be used. Strydom and Venter (2002) are of the opinion that 30 participants are enough to perform statistical procedures, although there are some authors who feel that a minimum of one hundred is required. Some writers argue that when one is using an experimental

design that involves two or more groups, there should be a minimum of 30 participants per group.

The power of a statistical test is the probability that the test will reject the null hypothesis when the alternative hypothesis is true; that is, the probability of not committing a Type II error. As the power analysis increases, the chance of a Type II error decreases. Power analysis can be used to calculate the minimum sample size required so that one can be reasonably likely to detect an effect of a given size. Probabilities of 0.05 (1 in 20); 0.01 (1 in 100) and 0.001(1 in 1000) increase the chances of rejecting the null hypothesis when the null hypothesis is false, decreasing the chances of a Type II error.

Priori power analysis is considered the ideal type of power analysis. Researchers specify the size of the effect to be detected; that is, the measure of the distance between H0 and H1), the α level and the desired power level (1-β) of the test. Faul, Erdfelder, Buchner & Lang (2009) have argued that priori power analyses are ideal in that low error probabilities α and β can be achieved for any specification of the effect size; however, the calculated sample sizes are usually much larger than what is considered manageable in behavioural research. They argue that other factors like financial constraints, time constraints and methodological reasons such as sample heterogeneity in the case of data aggregation across studies prohibit the use of ideal sample size. Assuming that a behavioural scientist has arrived at a maximum N that can be achieved given the institutional constraints of the research, the N will most likely be smaller than the ideal N as determined by priori power analysis. Thus the only way to arrive at a reasonable power level is to increase the chances of committing an error (Faul, *et al.*, 2009). In this study, priori statistical power calculation was not done.

Prajapati, Dunne and Armstrong (2010) recommended that if the priori power analysis was not done then the post hoc power analysis can be done. Post hoc analysis involves determining the level of statistical power achieved for a given sample size, effect size and alpha level. Therefore this type of power analyses is most useful at the end of a study. What is actually important here is that the clinically relevant effect size is specified and not the actual effect size found based on the results of the study.

3.4.3. Blinding

Blinding is a practice where study participants are prevented from knowing certain information that may somehow influence them, thereby affecting the results of the study. To ensure that the highest degree possible that the intervention is responsible for any noted differences between the two groups, people involved in the gathering or analysing data might also be blinded to knowing who is being given the treatment and who is not (Day & Altman, 2000). In this study, the participants were blinded in the sense that they did not know whether they were assigned to a control group or an experimental group.

3.5. RESEARCH INSTRUMENT

This study adopted the AUDIT (Alcohol Use Disorder Identification Test), which is a screening tool that was developed by WHO in 2001. The AUDIT which is a 10-item questionnaire provides a systematic screening (see appendices), of alcohol use (Babor & Grant, 1992; Babor, Higgins-Biddle, Saunders & Monteiro, 2001). The AUDIT is administered either as an oral interview or as a self-report questionnaire and is recommended for screening in a primary health care setting. The screening total score is considered a simple way to provide each patient with an appropriate intervention, based on the level of risk. Brief intervention strategies are recommended for non-dependent risky drinkers (Babor & Higgins-Biddle, 2001). The main advantage of using a questionnaire is that it is cheap and is also quick way to collect data from a larger group (Wilson & Sapford, 2006). The SBI methods were copied from the WHO collaborative study on brief interventions (WHO, 2001).

Alcohol use in this study was assessed using the AUDIT. The AUDIT is a measure of the prevalence of alcohol use. The AUDIT's 10 items cover the three conceptual domains of consumption, dependence symptoms, and alcohol-related consequences that were intended to parallel the World Health Organization concepts of hazardous drinking, alcohol dependence, and alcohol-related harm. Because AUDIT is reported to be less sensitive at identifying risky drinking in females (Freeborn, Polen, Hollis & Senft, 2000), the cut-off points of binge drinking

for females (Abiodun, 1996) were reduced by one unit as compared with those of males (Chinyadza, *et al.*, 1993). Furthermore, an assessment of alcohol use using a cut-off score of 8 or more was made for hazardous or harmful drinking. Hazardous drinking is defined as a quantity or pattern of alcohol consumption that places patients at risk for adverse health events, while harmful drinking is defined as alcohol consumption that results in adverse events (e.g., physical or psychological harm).

3.6. VALIDITY

Validity refers to the extent to which an instrument measures what it is intended to measure (Bennet, 2003). There are two types of validity in experimental research, internal and external validity. There are different factors that are relevant to both internal and external validity.

Maximising validity and minimizing bias

The question here is: To what extent can the intervention, rather than other influences, be considered to account for differing outcomes between the treatment and control groups? If not controlled in experimental design, these factors could produce effects that will interfere with the effect of the experimental stimulus. However, in randomized control trials, by employing a control group and random assignment, the RCT design minimizes bias and threats to internal validity by equalising the conditions on all "other influences" except for the intervention. Internal validity deals with the degree to which the findings of the research can be generalized to the whole population represented by the participants.

The following threats are common to internal validity that the random assignment addresses:

- **History.** External events that occur during the course of a study that could explain why people changed. An example is a life event such as a death in the family or being laid off from work. Negative life events, such as these, may offer an alternative explanation for study outcomes.

- **Maturation.** Psychological and biological processes that occur within individuals over the course of a study that provide an alternate explanation of why they changed.
- **Selection.** Another threat to validity may occur if the experimental and control groups differ at baseline.
- **Regression to the mean.** The tendency for extreme scorers to regress to the mean on subsequent measurements.
- **Attrition.** The rate of loss of participants from the study that differs between the intervention and control groups.

Minimising threats to external validity

The question here is: To what extent can the results be extended to people, settings, and interventionists different from those used in this particular study?

These are common threats to external validity that an RCT can address. They are:

- **Sample characteristics.** This refers to the extent to which we can generalize from the study sample to the population as a whole (or the population of interest).
- **Hawthorne effect.** People tend to react differently when they know they are being observed.

In this study, the observed factors that posed a threat to the validity were history, experimental mortality and the Hawthorne effect.

- History posed a threat because there were many events that could have happened between Time 1 and Time 2. In order to minimize that threat, the distance between Time 1 and Time 2 was six months.
- Experimental mortality was minimized by using participants from the same local area.
- The Hawthorne effect was difficult to control, but participants were informed about how it was important for them not to please the researcher, and to be honest in their responses.

- Pre-testing could have sensitized participants so that their response to treatment would be different.

In this comparison, outcomes for people randomly assigned to receive the new treatment are compared with those of people assigned to receive no treatment at all. The question is whether the new treatment produces any benefit at all, over and above the change due to the passage of time or the effects of participating in a study. A challenge with this control condition is that people receiving no treatment may find their own treatment outside the bounds of the study.

3.7. RELIABILITY

Reliability is the extent to which the instrument gives the same results after re-administration; this is re test reliability. The AUDIT is currently the only instrument specifically designed to identify hazardous and harmful drinking and is valid for detecting heavy drinking also in a general population sample (Aalto, Alho, Halme & Seppä, 2009). Cronbach alpha for the AUDIT was .78 for this sample. The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization as an effective screening instrument for alcohol use problems among patients seeking primary care for other medical problems in international settings, including African countries, namely Kenya and Zimbabwe (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2005; Babor, *et al.*, 2001). It has also been widely used as a standard tool in South Africa (Peltzer, 2006; Peltzer, Davids & Njuho, 2008).

3.8. DATA COLLECTION

The 10-item Alcohol Use Disorder Identification Test (AUDIT) (Babor, *et al.*, 2001) assesses alcohol consumption level (3 items), symptoms of alcohol dependence (3 items), and problems associated with alcohol use (4 items). In South Africa, a standard drink is 12g of alcohol. Freeborn, *et al.* (2000), reported that AUDIT is less sensitive at identifying risk drinking in women, that is, five or more units of alcohol per occasion. Therefore, Freeborn, *et al.*, (2000)

recommend that the cut-off points of binge drinking for women be four units of alcohol per occasion and five units for men. Responses to items on the AUDIT are rated on a four-point Likert scale ranging from 0 to 4 for a maximum score of 40 points. Higher AUDIT scores indicate more severe levels of risk with scores of 8 indicating a tendency to problematic drinking.

In this study, the AUDIT was administered at the baseline to determine those who would be included in the study. Patients who tested positive, that is, those with a cut-off score of 8-19 on the AUDIT questionnaire were eligible to participate in the study. After randomization, participants were grouped into an experimental group and the control group. The experimental group received intervention according to their category of alcohol consumption and the control group received only a leaflet on cutting back consumption. After six months, a follow-up was done, and the AUDIT was re-administered to collect post-test data. The AUDIT was administered in Tshivenda, which is the language that is spoken by nearly all the patients at the clinic.

Data were analysed by means of statistics. Statistics is defined as the study of methods for describing and interpreting quantitative information, including techniques for organising and summarizing data, and techniques for making generalizations and inferences. Numerical data can make a valuable contribution to evaluation research. The use of statistics in evaluation serves three primary purposes, namely:

- It is used to summarize a large amount of information through measures of central tendency or dispersion.
- It provides for frequency distribution to exhibit clusters and separation of responses.
- It provides a level of confidence that the data truly are representative of the intervention.

The collected data were captured and analysed using the Statistical Package for Social Sciences (SPSS). SPSS is a set of computer programmes that can be used to do different types of

statistical analyses. The advantage of using a statistical programme is that is enables one to calculate statistics quickly and accurately. SPSS can be divided into two categories, namely, data management and data analysis procedure.

The AUDIT score served as the dependent variable and the data from the AUDIT were analysed by means of a 2 x 2 repeated measures analysis of variance (ANOVA), with Time (pre-post intervention) being the within factor and Group (experimental-control) being the between factor. Missing data owing to non-response were deleted on an analysis-by-analysis basis. The researcher used an intent-to-treat analysis by including all participants who completed baseline assessments and who were randomized to intervention conditions. Individual cell sizes vary owing to missing values. Statistical significance was defined using the conventional value of $p<.05$.

Retention and attrition of participants

A total of 140 patients (35 women and 105 men, of mean age 30.7 years, SD=6.5 years, ranging from 20 to 47 years) enrolled in the study, completed baseline assessments, and were randomized to two conditions. All participants in the experimental condition (N=70), could be followed up (N=70), while participants in the control condition (N=70) 58 completed the follow-up interview (attrition rate of 17.1%). The overall attrition rate was 8.6%.

3.9. THE INTERVENTION

After the screening and assignment of participants to the control group and experimental group, those assigned to the control group were provided with the self-help leaflets on cutting back. They received no counselling. For ethical reasons only the leaflet that deals with cutting back consumption was given to this group.

The experimental group received the intervention. The brief intervention protocol indicates four components, namely: ask about alcohol use, assess, advise and assist. This includes direct feedback

about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (WHO, 2001).

According to the WHO protocol of brief intervention, after the administration of the AUDIT, the positive results are indicative of the next step which is provision of an appropriate intervention that meets the needs of each patient. Patients who score negatively in the AUDIT should be reminded about the benefits of low risk drinking or abstinence and told not to drink in certain circumstances such as when operating a vehicle or machinery, when pregnant or when considering pregnancy, if a contra-indicated medical condition is present or after using certain medications such as sedatives, analgesics and selected antihypertensive medication (WHO, 2001).

There are four levels of risks identified in the protocol and are as follows:

Zone I refers to low-risk drinking or abstinence.

Zone II consists of alcohol use in excess of low-risk guidelines and considered hazardous. It is generally indicated when the AUDIT score is between 8 and 15. A brief intervention using simple advice and patient education materials is the most appropriate course of action for these patients (WHO, 2001).

Zone III consists of alcohol use that is considered harmful in that the patient has started to experience problems because of alcohol use. The AUDIT score in this category is between 16 and 19. A combination of simple advice, brief counselling and continued monitoring with further diagnostic evaluation if the patient fails to respond or is suspected of possible alcohol dependence (WHO, 2001).

Zone IV is suggested by an AUDIT score in excess of 20. These patients are to be referred to a specialist for diagnostic evaluation and possible treatment for possible alcohol dependence. If the specialist services are not available, these patients can be managed in primary care. Patients can be managed first at the lowest level of intervention by their AUDIT score. If they do not respond to the initial intervention, they should be referred to the next level of care (WHO, 2001).

Brief intervention for hazardous and harmful drinking constitutes a variety of activities characterized by their low intensity and short duration. They range from 5 minutes of simple advice about how to reduce hazardous drinking to several sessions of brief counselling to address more complicated conditions. Intended to provide early intervention before or soon after the onset of alcohol-related problems, brief interventions consist of feedback of screening data designed to increase motivation to change drinking behaviour as well as simple advice, health education, skill building and practical suggestions. The elements of brief intervention protocol are as follows: present screening results, identify risks and discuss consequences, provide medical advice, solicit patient commitment, identify goals, such as reduce drinking or abstinence and give advice and encouragement (WHO, 2001).

In this study, participants were randomized and allocated to the experimental group, completed AUDIT at baseline and received brief intervention for alcohol reduction. The goals of brief intervention were to identify alcohol-related problems, to provide sensible drinking leaflets emphasizing the idea of sensible drinking limits and to make sure that patients realize that they are in the low-risk drinking category, and to provide feedback on their alcohol use,

The participants whose alcohol consumption was categorized as Zone II level of risk received a 10 minute session, which involved giving them feedback on their drinking behaviour as indicated by their AUDIT score, encouraging them that they had not yet developed problems related to alcohol, but that if they kept on drinking the way they were drinking, they were likely to develop alcohol-related problems. During the session, they were given simple advice about how they could reduce their hazardous drinking. Basically, clients were provided with information about sensible drinking and the effects of drinking.

The participants whose alcohol consumption was consider as Zone III level of risk received a 25 minute session of brief counselling. The session comprised the basic elements of brief intervention which involved providing participants with feedback on their drinking behaviour as indicated by their AUDIT score, identifying risks, discussing consequences of their alcohol consumption, providing medical advice, soliciting their commitment, identifying their goal of either reducing consumption or abstinence, and then giving them advice and encouragement. They were

educated the effects of alcohol on one's body and other areas that are problematic owing to alcohol use. They were also assessed at that point in terms of their readiness to change their behaviour. This was done using a scale of 1-10 to determine how ready they were to change the way they had been drinking. Depending on the readiness to change, the drinking behaviour from pre-contemplation and/or contemplation, the researcher then talked about how to cut back or stop drinking. The researcher helped the clients to identify situations that might tempt them to go back to this unhealthy drinking behaviour, and together with the researcher, the clients devised strategies to deal with those situations. Then the clients were also prepared in terms of how to deal with relapses and encouraged to return if there were any challenges. Clients were also informed that they would be contacted by the researcher after six months, to check on them and how they had been progressing since this intervention.

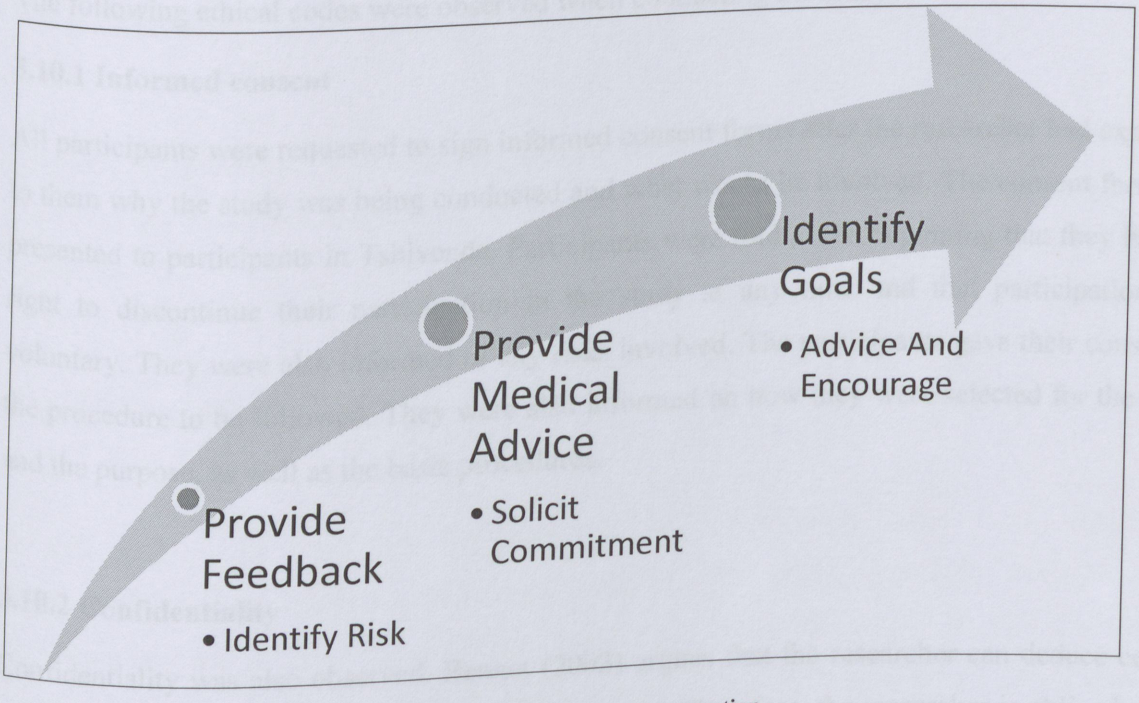

Figure 3.2. The process followed from administering AUDIT to intervention

Post intervention

The AUDIT was re-administered to 132 participants six months after the intervention. All participants (N=70) who were in the experimental group were re-assessed and only 62 from the

control group were re-assessed. Follow-up or re-assessment was done at the patients' homes and some were done telephonically. The assessment was done to determine whether the intervention had led to any behavioural change. It was assumed that after the intervention, if the control group showed no change, and the experimental group showed substantial change, then the change could be due to the intervention. The pre- and post-tests were used to evaluate the effectiveness of brief intervention. Data was collected from both groups at two different points in time, Time 1 (pre-test) and Time 2 (post-test). The disadvantage of the pre-test and post-test is that the pre-test often sensitizes participants to the post-test questions, when the same questions are used for both pre-test and post-test.

3.10. ETHICS

The following ethical codes were observed when conducting the study:

3.10.1 Informed consent

All participants were requested to sign informed consent forms after the researcher had explained to them why the study was being conducted and what would be involved. The consent form was presented to participants in Tshivenda. Participants were told at the beginning that they had the right to discontinue their participation in the study at any time and that participation was voluntary. They were also informed of any risks involved. The participants gave their consent to the procedure to be followed. They were also informed on how they were selected for the study and the purpose, as well as the basic procedures.

3.10.2 Confidentiality

Confidentiality was also observed. Bennet (2003) argues that the researcher can deduce certain personal information from the participants' responses. Therefore, the researcher is obliged not to divulge the information to any person. There are three main reasons for declaring confidentiality. It improves the quality and honesty of responses, especially on sensitive issues. It also encourages participation in the study and therefore increases the representivity of the sample, and lastly confidentiality is offered to protect a person's privacy (Weiten, 2011).

In this study, numbers were assigned to questionnaires which were linked to the names of the participants. Their names, with the corresponding number on the questionnaire, were written in a book and this information was kept in a safe place. The researcher was the only person who had access to that book. This was done so that when the participants had completed the post-test questionnaire, the researcher would be able to match the participants' numbers and names so that they could complete the same questionnaire. Study findings were honestly reported.

3.10.3 Compensation

Participants did not receive any remuneration for completing the baseline and for returning to the clinic for the follow-up assessment. Following the six-month follow-up, participants in the health education control group were offered the experimental alcohol reduction intervention.

All study procedures were approved by the University of Venda Research Ethics Committee and the Limpopo Provincial Department of Health in South Africa, as well as District and clinic authorities.

3.11. CONCLUSION

In this chapter, the researcher discussed the type of research design used, namely the experimental or randomized control trial used in this study. Although there are some disadvantages associated with randomized control trials, as with any other designs, this design is a powerful tool for conducting an intervention study. Different threats to validity were identified. Data were collected at pre-test and at post-test levels, and an intervention was conducted with the experimental group before the second assessment. The following chapter presents the findings of the study.

CHAPTER 4: FINDINGS

4.1. INTRODUCTION

In this chapter the findings of this study are presented.

4.2. DATA ANALYSIS

AUDIT score results

Paired samples tests analyses found a significant reduction of the AUDIT score in both the intervention ($t=15.47$; $P<0.001$) and the control ($t=11.28$; $P<0.001$) group, although the experimental group had a higher reduction than the control group. Using ANOVA, there was no overall significant intervention effect between experimental and control groups at a six month follow-up (see Table 4.1).

Table 4.1: AUDIT score reduction outcomes among participants at baseline and 6 months follow-up following intervention (N=140)

	Experimental	Control	ANOVA	
			F	**P**
	M (SD)	M (SD)		
AUDIT score*				
Baseline	13.1 (3.8)	12.7 (3.2)	.405	0.526
Six month follow-up	7.0 (3.6)	8.1 (4.3)		

At baseline

Participants in both control group and experimental group were categorized into 3 zones, that is, zone II, III and IV.

Post intervention

Participants were re-assessed using the AUDIT questionnaire six months after the intervention. The results of the post-test are shown below.

The sample included 132 patients, 70 in the experimental group and 62 in the control group. The mean age of the experimental group was 30.8 (SD=6.5) and the control group 30.6 (SD=6.6), t =.23, p =.815. There were also no significant differences of other demographic variables: In the experimental group there were 54 men and 16 women, and in the control group 51 men and 19 women (χ^2=0.34, P=.558).

Participants were categorized according to the zones. The results indicate that there was a shift in drinking behaviour, with a new category of drinkers that was not there during pre-testing, namely zone1. Even though the control group did not receive any intervention, there was change in the drinking behaviour. Participants in the experimental group received intervention and the results indicate that there was also a change in their drinking behaviour.

Zone I- This is for people who scored 1-7 in the AUDIT. The current study only included the low risk drinkers. People who fell under this category at baseline were not included in the study. At the six month follow-up, those participants who were risky drinkers had moved from other zones to this zone. There were 17 males in the control group and 10 females from the control group, while 32 (24.4%) males and 11 (8.3%) females were in the experimental group. These participants were referred to as sensible drinkers. Normally these people drink to relax or socialize. Their intervention entailed giving them feedback on their drinking and encouraging them not to go

beyond this way of drinking, as well as providing them with information on the effect of drinking alcohol.

Zone II- At baseline, the number of participants who were found eligible to participate in this study were 97; there were 68 males (48.5%) and 29 females (20.7%) who scored 8-15 on the AUDIT. At six months post intervention, there were 22 (16.6%) males and five (3.8%) females in the control group, while 20 (15.2%) males and four (3.0%) females were in the experimental group. They are an at-risk group; that is, if they continue to drink the way they are, they might start to experience problems owing to their alcohol intake. Their intervention entailed giving them feedback on their drinking and providing them with information on the effect of drinking alcohol as well as talking to them about cutting back.

Zone III- At baseline, participants who were found eligible to participate in this study were 38, 19 males (13.5%) and 2 females (1.4%) in control group and 14 males and 3 females in the experimental group. The participants scored 16-19 on the AUDIT. At six months post intervention, there were four (3.0%) males and three (2.3%) females in the control group, while two (1.5%) males and no (0%) females were in the experimental group. Their intervention lasted for 30 minutes. They were given feedback on their drinking, information on the effect of drinking alcohol and information on how to reduce their drinking. After providing them with the information the researcher assessed their readiness to change their drinking behaviour. Depending on their readiness to change, the researcher then helped them to plan their behaviour change and then to action.

Zone IV- This group is referred to as the dependency drinkers. These people had already developed some psychological dependence on alcohol and were unable to control their drinking. At baseline, participants who were found eligible to participate in this study were one male (%) and no females (0%) who scored 8-15 on the AUDIT. At six months post intervention there were one (0.75%) male and no (0%) females in the control group while no (0%) males and one (0.75%)

female were in the experimental group. All the processes that were followed above apply with regard to these groups. The group was then referred to hospital for further management.

When classifying the consumption behaviour by AUDIT score, comparing before Brief Intervention and at six months follow-up, and among the experimental group at before Brief Intervention among the 70 risky drinkers, 42 were found to be hazardous drinkers, seven were harmful drinkers and one was a possible alcohol dependent drinker. After a six month interval among the experimental group consisting of 70 risky drinkers, 43 reduced their drinking to low risk drinking, 24 were hazardous drinkers, two were harmful drinkers and one remained a possible alcohol dependent drinker. It is evident that after the intervention at the six month interval, there was a decrease in drinking behaviour from high risk to low risk drinking.

As far as consumption behaviour in the control group is concerned, at baseline there were 70 risky drinkers, of these 48 were hazardous drinkers, 21 were harmful drinkers and one was a possible alcohol dependent drinker. After the intervention at the six month interval, 62 participants were assessed. At the six month follow-up among the 62 risky drinkers in the control group 27 had reduced their drinking to that of low risk drinkers, 27 were hazardous drinkers, seven were harmful drinkers and one remained a possible alcohol dependent. Noticeably, 27 risky drinkers had become low risk drinkers.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

In this chapter the findings of the study and literature control are presented.

5.2. Discussion

It emerged from this study that there was a significant reduction in the drinking patterns of both groups. Other randomized controlled trial studies had previously found that once the participants had been subjected to questions about their behaviour, they changed their behaviour whether exposed to intervention or not. However, it is not surprising that findings like this reveal behaviour changes even in the control group; this has been confirmed by previous studies. A study by Godin, Bélanger-Gravel, Amireault, Vohl, and Pérusse (2011) discovered that asking questions about cognition regarding physical activity positively influenced subsequent self-reported participation in the risky drinkers' behaviour over a three-month period. There could be different reasons why people change their behaviour post intervention, whether they are exposed to intervention or not. Some previous researchers have argued that the change in behaviour could be due to mere-measurement effect. According to French and Sutton (2010), this mere-measurement effect is also more likely to be detected when health-related behaviours are subjectively assessed.

A study conducted by Hermansson, Helander, Brandt, Huss and Roonberg (2010) found no significant differences between intervention groups and control groups. They concluded that alcohol screening may in itself cause reduction in the drinking. In agreement with a previous observation only very few tested positive for both baseline and follow-up alcohol screening. These results are also supported by this study. Of those enrolled in this study based on a positive alcohol screening results who also attended follow-up session after six months, only about 62 participants tested positive. Those allocated to the control group received no feedback about their

screening results; this may suggest that alcohol screening can in itself lead to a reduction in drinking.

Previous studies have reported that assessing only intention by means of a few items, changes subsequent performance of studied behaviours at follow-up (Fitzsimons & Williams, 2000; Sprott, Smith, Spangenberg & Freson, 2004; Levav & Fitzsimons, 2006), including physical activity (Williams, Block & Fitzsimons, 2006).

The precise mechanism behind the mere-measurement effect is still a matter of debate (French & Sutton, 2010). At this time, the dominant explanation of this effect is that asking behavioural intention questions heightens the accessibility of the person's attitude towards the behaviour, which in turns increases the likelihood that the behaviour will be adopted (Morwitz & Fitzsimons, 2004).

Other researchers have attributed this to the possibility of a cross-over effect that is present. Beich, Gannik, Saelan, and Thorsen (2007) argue that having been primed by the screening questionnaire, some control patients may have become more aware of their drinking and may be more open to discussing alcohol use issues with their doctors. In their study, they tried to minimize this effect by early randomization of all participants. This made it possible for them to avoid any feedback on the screening result being given to control-group patients. Controls merely took place in a rolling survey, and neither the patient nor the doctor knew about the screening result at any point.

Other researchers argue that changes in the measured behaviour of the control group should be viewed with caution because there might be different reasons that the control group behaviour changes even if there was no intervention. Many factors can be attributed to the change in the behaviour of the control group other than the assessment impact of clinical trials.

a) Blinding of study purpose (investigation of changes in alcohol consumption)

The previous researchers argue that a lack of blinding of subjects regarding the purpose of the studying can trigger social desirability bias, defined as the inclination of participants to give the researcher what they think the study is designed to find (Babor, McRee, Kasselbaum, Grimaldi, Ahmed & Bray, 2007; Kypri, 2007; Nye, Agostineli & Smith, 1997). As Daeppen, Gaume, Bady, Yersin, Calmes, Givel & Gmel (2007) maintain "there is reason to expect that these participants may have been aware of the nature of the study and adjusted the self-report in some manner".

b) Sample mix

The other reason for a positive change in a control group is attributed to sample mix. The previous researchers argue that enrolment may be affected by design elements, such as re-imbursement level or time requirements for completion of study procedures. In a non-treatment population, telegraphing the purpose of the study in consent form may predispose only clients who are already considering change to enrolling. They argue that it is common in the clinical research setting for patients to conceal substance abuse for fear that labelling might negatively influence a practitioner's willingness to provide medical care. Moss (2007) cites social control theory as a contributing factor to this phenomenon and social learning theory as the context for consequences of non-blinding.

The sample mix for brief alcohol intervention studies is also affected by the rate of the capture of eligible patients. Refusal to enrol in studies is more common in the primary care settings where patients are identified by screening, and alcohol use is rarely the presenting problem. In particular, small samples and randomization without blocking for problem intensity can result in a skewed distribution of acuity. If the sample is weighed toward the low end of the scale (high risk drinkers), there will naturally be fluctuations over time in consumption if the sample consists of primarily dependent drinkers who consume at outlier levels, and there will be a greater tendency to observe variations in measurement as a result of regression to the mean (Morton & Toggerson, 2005).

Moss, (2007) argued that assessment can raise an individual's awareness of risky drinking, initiate self-monitoring and lead to recognition of a discrepancy between current behaviour and a personal normative standard, communicate implicitly personal responsibility and impel a need for a change creating bias towards the null (Kypri, 2007). This type of connection is a final component of motivational intervention to reduce unhealthy alcohol use.

c) Procedures for control condition discharge

The argument here is that brief interventions in clinical studies require the control groups to receive a combination of normative feedback, and advice or referral. Standards of clinical care require that results be addressed by practitioners and in many countries institutional review boards require that control groups receive advice and/or referral resources. (Epstain, Drapin, Yusko, Cook, McCrady & Jensen, 2005; Clifford & Maisto, 2000).

d) Regression to mean

Alcohol intake varies over time and by season, except in the most dependent of drinkers (Dawson & Room, 2001). Regression to the mean at the time of repeated measurement may be a longer factor in self-reported declines in alcohol intake of control groups. Regression to the mean is to be expected, because outcomes conditions that vary over time are being measured. Measuring these outcomes with, admittedly imperfect instruments, an outlier value at enrolment is likely to be expected with a more moderate value at follow-up. Because of this variation, there is likely to be measurement bias because observations at Time 1 and at Time 2 may not reflect a true distribution (Morton & Toggerson, 2005; Finney, 2005).

e) Measurement/analysis issues

Variance in alcohol consumption end point is often larger with skewed distribution or outliers that may reduce statistical power and can complicate analyses. The treatment of outliers and transformation of data to account for skewedness must be considered for consumption endpoints. In order to limit inadvertent moderators of control group drinking, study participants must be blinded. Daeppen *et al*, (2007). Using a briefer version of a standardized instrument, that is,

replacing the long questionnaire AUDIT with also validated AUDT C which has three questions Kypri (2007). Nye, Agostineli and Smit (1999) suggest that normative feedback must be avoided, so as not to create heightened awareness that mimics intervention. Kypri (2007) proposes attention to a randomization procedure that will ensure a wide range of subjects and thus limit potential for bias; Morton & Toggerson (2005) stresses the importance of avoiding selection of the most severe cases in order to avoid pitfalls associated with regression to the mean.

In the current study, however, the experimental group had a higher reduction than the control group. This may be attributed to the brief intervention that was used. However, this analysis needs to be interpreted with caution. Although, overall, the data are consistent with the intervention being effective, the size of the true effect was probably smaller than the researcher had anticipated.

In the present study, brief intervention did not have an additional effect in comparison with the AUDIT screening. Most published brief intervention studies that did not find any additional benefit of brief intervention showed a decrease in alcohol use both in experimental and control groups. This parallel decrease was explained either by a Hawthorne effect, a natural history effect, or by regression to the mean (Beich, *et al.*, 2007). A study conducted by Beich, *et al.* (2007) did not find any decrease in alcohol use in either group. This can be explained by the fact that they included 83% of all patients screening positive in the AUDIT, and that the intervention was provided without delay as recommended (Babor & Grant, 1992; Babor, *et al.*, 2001). In the current study, this is possibly due to the lower impact of brief intervention in this target population.

Brief intervention has previously been found to be less efficient among alcohol dependents (Bien, *et al.*, 1993; Madras, Compton, Avula, Stegbauer, Stein & Clark, 2009). Furthermore, lack of differences between interventions may simply show that screening alcohol use with AUDIT and providing feedback about the score has a positive impact on alcohol-drinking behaviour (McCambridge & Day, 2008). This phenomenon has been suggested by different studies and could correspond with what Jenkins, McAlaney and McCambridge (2009) call reactivity assessment. The

results were also possibly due to spontaneous adaptations of the naturalistic treatment as usually received by both groups following AUDIT screening or BI.

The results also indicate that the overall effect of intervention in the intervention group was not statistically significant. This means that even though it cannot be disputed that the intervention had an impact, the impact was not very great or was not very significant compared to the change in behaviour that occurred in the control group. In their study Beich, *et al.*, (2007) who screened only 6897 patients, found 1087 (15.8%) risky drinkers, of whom 906 (13.1%) non-dependent drinkers became study participants and 537 (7.8%) were followed up. In another primary health care trial Senft, Polen, Freeborn & Hollis (1997) used the AUDIT to define the trial group, and included 78% of those who screened positive. The main intervention was not delivered by the doctor, but by a skilled counsellor. Nevertheless, only a modest, temporary reduction in the drinking frequency, but not in the overall amount of alcohol consumption, was achieved in this study.

Several systematic reviews have confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals (Bien, *et al.*, 1993; Kahan, Wilson & Becker, 1995; Wilk, *et al.*, 1997; Poikolainen, 1999; Moyer, *et al.*, 2002; Ballesteros, Gonzalez-Pinto, Querejeta & Arino, 2004). Until lately, little attention has been paid to the issue of the external validity of these results (Edwards & Rollnick, 1997; Beich, *et al.*, 2007. A systematic review (Berltholet, Daeppen, Weitlisbach, Fleming, Burnand, 2005) on the efficacy of brief alcohol intervention concluded that intervention could reduce alcohol consumption, but that the effectiveness of such interventions in daily practice remains unexplored.

This gap between efficacy and effectiveness has also been recognised by some of the pioneers of brief intervention (Heather & Wallace, 2003). The proposals to overcome this gap have, so far, focused on the search for even better screening tools and better implementation strategies for the SBI programme.

It is not uncommon in randomized control studies to find that there were changes in both the interventions group and control group at post-test. Previous researchers (McCambridge & Day,

screening provokes contemplation about drinking and makes the patient aware of his or her alcohol intake in a way that might not occur otherwise. In the first study specifically to examine the direct effects of screening, McCambridge and Day (2008) showed that being screened with AUDIT with no subsequent BI or other intervention led to reduced self-reported hazardous drinking, with the effect sizes being similar to the known effects of BIs. They argued that this was a "remarkable demonstration of the potency of alcohol screening as an intervention in its own right".

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

In the current study, paired samples tests analyses found a significant reduction of the AUDIT score in both experimental ($t=15.47$; $P<0.001$) and control ($t=11.28$; $P<0.001$) groups; although the experimental group had a higher reduction than the control group. Using ANOVA, there was overall no significant intervention effect between experimental and control conditions at six months follow-up (see Table 4.1). Findings related to this study were also observed in other studies. Areesantichai, Iamsupasit, Marsden, Perngparn and Taneepanichskul (2010) did the t-test comparing the change of AUDIT score difference at baseline and after the follow-up at each intervention. After the follow-up in two communities, there was a significant difference of the total score at .001. Their findings were also consistent with the previous research findings like those of Bien, *et al.* (1993); and Moyer, *et al.* (2002) which confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals.

5.5. CONCLUSION

Different authors maintain that if both the control and the experimental groups are similar before the intervention, and if only the experimental group receives intervention, differences after

intervention must be attributed to the intervention (Bennet, 2003). However, Kazdin (1980) argues that even groups which are similar at the beginning might become different owing to other reasons other than the effects of the intervention.

In this study, the experimental group showed a significant change in their drinking behaviour after the brief intervention. What is surprising is that even those in the control group also changed their drinking behaviour. There could be different reasons for this improvement. Firstly, since they were assessed at the primary health care clinics they could have been told about reducing their drinking by the nurses during their consultation. Secondly, since they were provided with information on cut-back leaflets they could have thought about it and changed their behaviour. Thirdly, the interaction in the community between the control group and the experimental group could also have led them to share information between the two tests.

CHAPTER 6: SUMMARY OF FINDINGS, LIMITATIONS OF THE STUDY, RECOMMENDATIONS AND CONCLUSION

6.1. INTRODUCTION

This chapter presents the aims and objectives of the study, hypotheses, summary of findings, limitations of the study, recommendations which are based on the findings of the study, as well as the concluding remarks.

6.2. SUMMARY OF FINDINGS

The main aim of the study was to evaluate the effectiveness of the Screening and Brief Intervention for risky alcohol use in the primary health care setting.

Specifically, the objectives of the study were:

- To pre-test the use of alcohol using the AUDIT;

The AUDIT questionnaire was pre-tested on two groups, the experimental group and the control group. At baseline, the AUDIT was administered to 140 participants divided into two groups of 70 each. The findings indicated that in the control group, 54.2% males and 14.1% females fell within Zone 2 category; 27.1% males and 2.8% females were in Zone 3; and 1.4% males and 0% females into Zone 4. Among the experimental group, 42.8% males and 27.1% females were found to be Zone 2 drinkers; 20% males and 4.2% females were in Zone 3; and 4.2% males and 1.4% females fell into Zone 4.

- To implement the SBI;

Brief intervention was conducted with the experimental group. Seventy participants received the intervention and the control group was provided only with the leaflet on cutting back. The results

indicated that among the control group, 54.2 % of the males and 14.1 % of the females were hazardous drinkers; 27.1% of the males and 2.8% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 42.8% of the males and 27.1% of the females were found to be hazardous drinkers, while 20% of the males and of the 4.2% females were found to be harmful drinkers, and 4.2% of the males and 1.4% of the females were possibly alcohol dependent.

- To post-test the use of alcohol six months after the intervention.

Six months after intervention, the AUDIT questionnaire was re-administered to both control and experimental groups. This was done to assess their alcohol intake after the intervention as well as to assess if the intervention done was successful. The results indicated a decrease in alcohol consumption in both groups. At baseline, all the participants were grouped in the zones, from Zone 2 to Zone 4 and at follow-up they were grouped from Zone1 to Zone 4. The results indicated that among the control group, 24.2% of the males and 14.2% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 31.4% of the males and 7.1% of the females were hazardous drinkers; 5.7% of the males and 4.2% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 45.7% of the males and 15.7% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 28.5% of the males and 4.2% of the females were found to be hazardous drinkers, while 2.8% of the males were found to be harmful drinkers and 1.4% of the females were possibly alcohol dependent.

The findings of this study show that the screening and brief intervention for alcohol risky drinking was effective as it reduced the level of drinking after the intervention. As in previous studies, it was also found that by asking people questions related to their behaviour, people changed that particular behaviour.

6.3. LIMITATIONS OF THE STUDY

The limitation was that the distance in time between the pre-test and post-test was six months and this threatened the internal validity of the study because some of the participants could not be reached to do the post-test.

There are different factors such as lack of time, fatigue, personal beliefs and other personal priorities that affect the way participants cooperate. The challenge that the researcher experienced during data collection was that the participants had to come to the primary health care clinic for other ailments and some complained that participating in this study was going to delay them. After it was explained that the questionnaire was not that long and that they would complete the questionnaires in the cubicle while waiting to see the sister, they cooperated.

6.4. RECOMMENDATIONS

The researcher recommends that, since the findings of this study indicate that the screening and brief intervention is effective in reducing alcohol consumption, the SBI be adopted as a compulsory routine screening at primary health care clinics. The compulsory screening can be adopted to help identify potential at-risk drinkers, for instance, mental health care users. The early identification of potential problem drinkers and intervention for mental health care users might help to prevent the relapse and revolving door syndrome. This is because most of the mental health care users who are in and out of the hospital also use alcohol.

In ante natal care, SBI can be done as part of the nurses' history taking. This will help reduce the risk of children born with Foetal Alcohol Syndrome. It will also help reduce maternal and infant death which is one of the millennium developmental goals.

In the care for and treatment of patients with chronic conditions, for example, diabetes and hypertension, compulsory SBI is also important because the majority of patients with chronic conditions get their treatment at the primary health care clinic instead of at private facilities. Most patients on chronic medication for diabetes and hypertension lead unhealthy lifestyles that include risky drinking while taking medication. Compulsory SBI will assist identify those who need intervention and continuous support.

Compulsory SBI is also necessary for all individuals receiving medical attention in any given setting even if it is not at the primary health care clinic, for example, in major companies where they provide health care services on-site. The compulsory SBI will help companies to identify those people who need intervention and they can provide support.

The compulsory screening can also be adopted in other settings that are not necessarily health related, for example, as part of issuing drivers' licenses and in the renewal of those licenses in order to prevent unnecessary accidents.

In trauma centres victims of sexual gender based violence (SGBV) are taken for further management. As part of a holistic approach to ensure a health body and mind, it is imperative to screen for risky alcohol use. This is basically because previous researchers and authors have indicated that alcohol misuse has many negative consequences, ranging from health risks, financial difficulties, trouble with the law, social relationships problems, and family problems.

Policy makers to make policies that will ensure that screening and brief intervention with regard to alcohol use are made compulsory in primary health care settings.

It can also be integrated in the training of all health care professionals

There is a need to get the cooperation of compulsory SBI health care professionals for SBI to be effective at primary health care level. The following implementation programme is recommended:

6.4.1. Background

Screening is done using the AUDIT questionnaire to find out about people's use of alcohol and it was developed by World Health Organization. The AUDIT can be used at primary health care clinics because primary health care is the first contact with the health system for people seeking care, and most people attend primary health care facilities at least once per year.

Many common problems seen at primary health care settings may be made worse by alcohol use. SBI provides an opportunity to educate patients about the risk of excessive alcohol use. There is evidence that the use of alcohol is prevalent throughout the world and is associated with a significant public health burden. Excessive alcohol use is also a risk factor for a wide variety of social, financial, legal and relationship problems for individuals and their families.

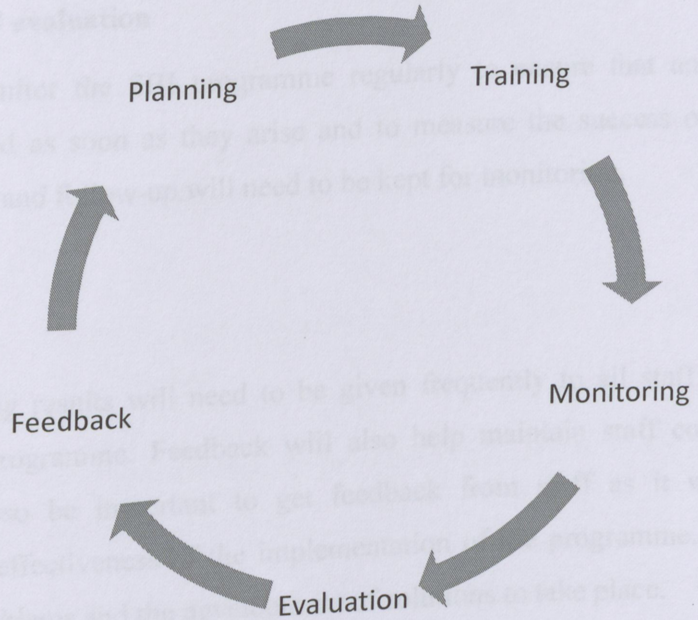

Figure 6.1: The process of implementing the SBI programme at primary health care centres

6.4.2. Planning

When implementing a programme like SBI, it is important for the staff members who are involved to understand the reasons for the programme, to feel a sense of ownership and enthusiasm for its implementation, understand their roles and be committed to making it work. There must be a coordinator for the implementation of the programme. This person will be responsible for making sure that all staff members understand their roles and responsibilities and that all the necessary tasks are carried out.

6.4.3. Training

Staff must be trained to implement the SBI programme. Effective training will enable staff members to discuss their roles and functions responsibly and also their attitudes towards screening and early intervention for harmful drinking. Training also provides opportunities for role play and supervised practice in administering AUDIT and carrying out follow-up activities.

6.4.4. Monitoring and evaluation

It is important to monitor the SBI programme regularly to ensure that any implementation problems are addressed as soon as they arise and to measure the success of the programme. Records of SBI details and follow-up will need to be kept for monitoring.

6.4.5. Feedback

Feedback of monitoring results will need to be given frequently to all staff for the on-going improvement of the programme. Feedback will also help maintain staff commitment to the programme. It will also be important to get feedback from staff as it will help provide information about the effectiveness of the implementation of the programme. This will enable the identification of problems and the development of solutions to take place.

6.5. CONCLUSION

The aims and objectives of this study were achieved. A research instrument was designed and used for both pre-test and post-test assessments. The hypothesis that was formulated and tested was supported by the study and one hypothesis was not supported.

This chapter reported the limitations that were observed. They included the drop out of some participants. Certain gaps in the research methodology were identified. These included issues related to the instrument. Four areas in which improvements can be made were listed. Recommendations based on the findings of the study were made.

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Appendix 1.

AUDIT Questionnaire

The Alcohol Use Disorders Identification Test (AUDIT): Interview Version

Dear Participant,
As part of my research I am conducting a study on the prevalence of alcohol use among patients who are coming to the clinic for consultation for any other illness. This information is important because it will assist us to tailor intervention according to your needs. To help me do this, now I would like to ask you some questions about your use of alcohol beverages during the past twelve months. Your answers to these questions will be treated in strict confidence. No details of your name will be written on this questionnaire.

Age:___ years **Gender:** [1] Male [2] Female **Date:** ____/ ____/ ______

A standard drink is:

	*A single tot of spirits (whisky, gin & vodka) (e.g., 25ml at 43%)*		**1.1.1.1.1** A small glass of liqueur or aperitif *(e.g., 25ml at 30%)*		
	*1 can of ordinary beer (e.g., 340ml at 5%)*		*1 glass of wine (e.g., 120ml at 12%)*		*Cartoon of ordinary commercial sorghum beer (e.g., 500ml at 3%)*

1. How often do you have a drink containing alcohol in the past 12 months?
   - (0) Never [*skip to Qs 9-10*] ☐
   - (1) Monthly or less ☐
   - (2) 2 to 4 times a month ☐
   - (3) 2 to 3 times a weeks ☐
   - (4) 4 or more times a weeks ☐

   [ ]

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   - (0) 1or 2 ☐
   - (1) 3or 4 ☐
   - (2) 5or 6 ☐
   - (3) 7, 8, or 9 ☐
   - (4) 10 or more ☐

   [ ]

3. How often do you have (for men) five or more and (for women) four or more drinks on one occasion?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [ ]

Skip to question 9 and 10 if Total Score for Qs 2 and 3 is =0

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [ ]

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [ ]

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [ ]

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [ ]

8. How often during the last year have you been unable to remember what happened the night before because you had been drunk?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [ ]

9. Have you or someone else been injured as a result of your drinking?
   - (0) No ☐
   - (2) Yes, but not in the last year ☐
   - (4) Yes, during the last year ☐

   [ ]

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you to cut down?
    - (0) No ☐
    - (2) Yes, but not in the last year ☐
    - (4) Yes, during the last year ☐

    [ ]

Record total of specific items here [ ]

Appendix 2: Consent letter and consent form

Consent letter

Dear Respondent,

I am Mpho Ramarumo from the University of Venda. I am conducting research regarding Evaluation of the screening and brief intervention for risky alcohol use in primary health care clinic in Sibasa local area in Thulamela municipality: A randomized controlled trial. You are kindly requested to participate in this study by responding to the few questions that I would like to ask you. The study is conducted for educational purposes.

Please note that participation is voluntary and you do not have to take part in this study. However, I would really appreciate it if you would share your thoughts with me. If you choose to participate you may still quit at any time, there will be no penalties and you will not be prejudiced in any way.

I will not record your name and the information you provide will remain confidential and there will be no repercussions from the answers you give. The interview will last around 10 – 15 minutes. I know that you cannot be absolutely certain about some of the answers but I ask that you be as open and honest as possible in answering these questions. Some questions may be personal in nature and I will also ask some questions that may involve thinking about and recalling the past or thinking about the future. I hope that does not make you feel too uncomfortable

Thank you.

Consent Form

Consent form

I hereby agree to participate in the research on --
-------------------------- I understand that I am participating freely and without being forced in any way to do so. I also understand that I can quit at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the interview and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to me and my community on the results of the completed research.

Signature of Respondent Date: ----------------------------

Signature of Researcher Date: -----------------------------

Telephone Number:

Evaluation of the screening and brief intervention for risky alcohol use in Sibasa primary health care clinic in Thulamela Municipality: A randomized controlled trial.

by Mpho Ramarumo

Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology at the University of Venda

Promoter: Prof. K. Peltzer

Co-promoter: Prof. L.B. Khoza

Submitted on April 2014

DECLARATION

I, Mpho Ramarumo, hereby declare that the thesis for the Doctorate of Philosophy degree in Psychology at the University of Venda, hereby submitted by me, has not previously been submitted for a degree at this or any other institution, and that it is my own work in design and execution, and that all reference material contained therein has been duly acknowledged.

Signature

23/4/2014

Date

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DEDICATION

I dedicate this study to my dear family who have been there for me and supported me throughout;

My dear husband who was so supportive and encouraging through it all;

My boys Thembuluwo and Zwothezwiunakele who had to compromise and understand why I had to be absent from the house for many days while I was working on this thesis;

My late father and mother, Mr. Ntsudzuluseni Amos and Mrs. Mashudu Grace Ramarumo, who encouraged me and believed in me from the time I started school; and

My siblings, Tendani, Zwidofhela, Takalani and Ntsudzuluseni. Thank you all for your support.

ABSTRACT

Background

The use of alcohol as a drug is common in many societies, and has a history stretching back for millennia (Rodseth, 2012). There is a well-developed culture surrounding the production and consumption of alcoholic beverages, as they form part of celebrations, meals and religious rituals and frequently form the hub of social interaction (Rodseth, 2012). In a review of the data from national surveys carried out in South Africa, Peltzer and Ramlagan (2009) found that binge drinking was between 7% and 11% and risky drinking, 6.9%. South Africa appears to have one of the highest levels of alcohol consumption per drinker in the world. Up to a third of drinkers in this country drink at risky levels over weekends, and it is common for them to drink to intoxication (Peltzer & Ramlagan, 2009). Thirty to fifty percent of people, who drank in 2008, experienced at least one alcohol-related problem, such as missing work or having interpersonal problems (Schukit, 2009).

Disorders related to alcohol use are responsible for a large proportion of the health-care burden in many countries. Alcohol affects almost every organ in the body (Schukit, 2009). Alcohol-related traumatic injuries, as a result of violence and motor vehicle accidents are common in South Africa. The levels of Foetal Alcohol Syndrome are the highest ever recorded (Peltzer & Ramlagan, 2009). Studies show very strong links between drinking and the engagement in risky sexual behaviours, increasing the risk of HIV infections (Peltzer & Ramlagan, 2009). Risky alcohol use is a problem as it creates many negative consequences for both the drinker and the people near to him/her. There is a need for an effective method to help those who are risky drinkers to reduce their drinking.

The use of brief intervention can be very effective in helping the patients reduce or discontinue alcohol abuse (Rodseth, 2012). The brief intervention protocol includes four components, namely: ask about alcohol use, assess using the Alcohol Use Disorder Identification Test (AUDIT), advise using the brief intervention protocol, and assist. Intervention includes direct feedback about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (Saunders, Aasland, Amundsen & Grant, 1993).

Objectives

- To pre-test the use of alcohol with the aid of the Alcohol Use Disorder Identification Test;
- To implement the screening and brief intervention; and
- To implement a post-test to ascertain the use of alcohol 6 months after the intervention.

Data collection and analysis

A sample of 140 participants who consulted the Sibasa clinic was selected using the AUDIT questionnaire, and then randomly sampled to be either part of a control or experimental group. Each group consisted of 70 participants. After selection, the control group was provided with only an information leaflet on how to cut down alcohol. The experimental group was provided with individual counselling. Depending on their drinking behaviour, the counselling the experimental group received ranged from simple advice, alcohol education and brief counselling. Six months after the first AUDIT, both groups were reassessed to ascertain if there had been any change in drinking behaviour.

Main results

The baseline data was compared with the post test data using ANOVA and the results showed a significant reduction of the AUDIT score in both experimental ($t=15.47$; $P<0.001$) and control ($t=11.28$; $P<0.001$) groups. However, the intervention group had a higher reduction in alcohol consumption than the control group. Using ANOVA, showed that there was, overall, no significant intervention effect between experimental and control conditions at the 6 months follow-up.

Author's conclusions

Overall, brief intervention was effective in reducing the consumption of alcohol. There was improvement on the alcohol consumption of the control group. The sample was small, hence there is a need for future researchers to continue the research using bigger samples.

ACRONYMS

AUDIT	Alcohol Use Disorder Identification Test
BACs	Breath Alcohol Concentration
DALY	Disability Adjusted Life Years Lost
FBDG	Food-based Dietary Guidelines
HIV/AIDS	Human Immunodeficiency Virus/
MRC	Medical Research Council
NIAAA	National Institute on Alcohol Abuse and Alcoholism
PHC	Primary Health Care
RCT	Randomized Control Trial
SADHS	South African Demographic and Health Survey
SBI	Screening and Brief Intervention
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1. INTRODUCTION

The use of alcohol as well as the problems arising from its misuse is of widespread concern. The major impact of the misuse of alcohol is on the lives of both drinkers and the non-drinkers. These problems range from financial, legal and social problems to health problems that include the spread of sexually transmitted infections such as HIV/AIDS. The use of alcohol and other substances is also associated with the high rate of gender-based violence in South Africa (WHO, 2005).

Attempts to make people aware of the impact of alcohol misuse before complications develop owing to alcohol addiction have been made in various places. Awareness campaigns about alcohol use and misuse have been conducted to reduce the use of alcohol. However, the rate of alcohol misuse is still rising. There is a need for some form of intervention that will address the issue of alcohol use and misuse in the primary care setting where people can be reached before problems develop.

This study evaluated the effectiveness of screening and brief intervention to prevent alcohol misuse in the primary health care setting. The study used a randomized control trial or an experimental research design with patients who consulted primary health care centres for any ailments as research subjects. Participants included in the study were chosen through the use of random sampling. They were then divided into two groups, namely, the experimental group and the control group. Both groups were assessed before the intervention and after the intervention. The experimental group also received intervention before taking the second assessment. The results of both groups were compared and analysed using statistical package for social sciences (SPSS) as a way of evaluating the effectiveness of the brief intervention.

This chapter presents the following:

The background of the study, and the statement of the problem;

The aims and objectives of the study;

The significance of the study;

The proposed hypotheses;

Definitions of concepts;

Delimitations of the study;

Organization of the dissertation;

Conclusion.

1.2. PROBLEM STATEMENT

Alcohol consumption has been part of human history since time immemorial. There are numerous biblical examples and ancient myths that refer to alcohol. Local history and archaeological findings also suggest that consumption of alcohol has always been part of African culture, rituals, traditions and customs. However, the fact that people still continue drinking alcohol and pass down this habit through generations does not adequately explain why alcohol is consumed. Moreover, patterns of alcohol use have changed significantly over time and evidence suggests that the quantity consumed now is far greater than in earlier times (Gumede, 1995; Parry & Bennets, 1998). The World Health Organization (WHO) estimates that around two billion people world-wide consume alcohol (WHO, 2004). There is clearly no single reason why they do so or why different people drink to different extents. It is apparent that drinking is influenced by factors such as genetics, social environment, age, culture, gender, personality, accessibility and exposure (Parry & Bennets, 1998).

The consumption of alcohol is associated with many problems, not only for the person who drinks, but for other people who might be directly or indirectly affected by the drinking behaviour. Alcohol consumption is associated with many health-related problems and has been implicated in many violence-related injuries and deaths around the world.

In South Africa statistics have shown that alcohol has been associated with many diseases, injuries and high mortality rates. The mortuary statistics of 2002 given by the Medical Research Council (MRC) indicated that in Cape Town, Durban, Gauteng and Port Elizabeth, 45% of all non-natural deaths had Blood Alcohol Concentrations (BACs) greater than or equal to 0.05g/100ml; specifically Durban had 37%, Gauteng 40%, Cape Town 53% and Port Elizabeth 61%. Levels of alcohol were particularly high for transport-related deaths and homicides with 63% of transport-related deaths and 69% of homicides reported in Port Elizabeth, as having levels above the legal limit for driving (0.05g/100ml) (Plüddemann, Parry, Donson & Sukhai, 2004).

The MRC 2001 statistics from trauma units indicate that in Cape Town, Durban and Port Elizabeth, 39% of trauma patients had breath alcohol concentrations (BrACs) greater or equal to 0.05g/100ml; Durban had 22%, Gauteng 36%, and Port Elizabeth 57%). Levels of alcohol were particularly high with regard to transport and violence injuries with, for example, 73% of patients with violence-related injuries in Port Elizabeth and 46% patients with transport-related injuries in Cape Town having high alcohol levels above the legal limit for driving (Plüddemann, *et al.*, 2004).

The 2003 MRC statistic for the demand of specialist treatment services indicate that of 5886 people treated at 52 specialist substance abuse treatment centres in Cape Town, Durban, Mpumalanga and Port Elizabeth in the first half of the year, 52% reported having alcohol as their primary drug of abuse, with a further 13% having alcohol as their secondary drug of abuse (Myers & Parry, 2005).

Foetal Alcohol Syndrome (FAS) statistics of research conducted in Western Cape (Wellington) indicate that the prevalence of Foetal Alcohol Syndrome among Grade 1 learners was 46 per 1000 in 1997 and 75 per 1000 in 1999 (Croxford & Viljoen, 1999). Similar research conducted in Gauteng and De Aar in 2001 and in Upington in 2003 found FAS prevalence rates of 19, 103, 75 (estimates) per 1000 respectively.

A study conducted by the MRC in Atteridgeville in 2003 on alcohol and risky sex statistics among people aged between 25 and 44 found a significant positive association between various measures of alcohol use, previous month's use, frequency, problems and having multiple sexual partners or sexual relations that were regretted in the three months before the study (Morojele, Kachiengá, Nkoko, Moshia, Mokoko, Parry, Nkowane & Saxena, 2004). For example, the correlation between the quantity of alcohol consumed and the number of sexual partners (over a lifetime) was 0.436.

In 2000 a report by MRC on the statistics of alcohol and family violence, indicates that in Cape Town, Durban and Johannesburg between one-third and half of charged offences categorized as family violence, reported that perpetrators were under the influence of alcohol at the time of the alleged offence (Parry, Plüddemann, Louw & Leggett, 2004). Other reports indicate that academic failure and absenteeism were also significantly associated with alcohol consumption (Peltzer, Cherian & Cherian, 1999a).

This gives a picture of alcohol consumption in South Africa.

Many people are ignorant of the facts regarding the impact and effects of drinking alcohol; they do not know the dangers associated with drinking alcohol. The question arises: What needs to be done to reduce this problem?

This study sought to evaluate the effectiveness of Screening and Brief Intervention (SBI) in the primary care setting as an area where problems associated with the use of alcohol can be addressed.

1.3. AIMS AND OBJECTIVES OF THE STUDY

The main aim of the study was to evaluate the effectiveness of screening and brief intervention in the primary health care setting in reducing the use of alcohol.

Specifically, the following were the objectives of the study:

- To pre-test the use of alcohol using the Alcohol Use Disorder Identification Test;
- To implement screening and brief intervention;
- To post-test the use of alcohol six months after the intervention.

1.4. SIGNIFICANCE OF THE STUDY

It is the intention of this study to show the strength of screening and brief intervention for risky alcohol consumption.

The findings of this study are also useful for training of health care providers on how to screen and intervene for risky alcohol use.

1.5. HYPOTHESES

For this study, the following hypotheses were formulated:

a) If patients are screened for their alcohol use and subjected to an intervention strategy, they will change their drinking behaviour.
b) If patients are screened for their alcohol use and receive only an information leaflet on how to cut down on their drinking, they will not change their drinking behaviour.

1.6. DEFINITION OF CONCEPTS

Alcohol misuse: The over-use or incorrect use of beverages containing alcohol or ethanol

Evaluation: A strategy used to determine the worth or value of an intervention

Screening: A method used to assess the presence and the extent of the symptoms of a problem

Brief intervention: An action used for a limited time to assist in the elimination of the existing symptoms of a problem.

DELIMITATIONS

The study included only patients who presented themselves for treatment of any ailments in the clinics in the Sibasa local area in Vhembe District Municipality.

1.7. ORGANIZATION OF THE DISSERTATION

Chapter 1 provides an introduction to the study.

Chapter 2 presents a literature review about the nature of alcohol misuse.

Chapter 3 sets out the research methodology used to conduct the study.

Chapter 4 presents the findings of the study.

Chapter 5 presents a discussion of the findings of the study.

Chapter 6 summarizes the findings of the study, draws conclusions from the findings and presents recommendations based on the conclusions.

1.8. CONCLUSION

This chapter presented the background of the problem, the problem statement and the hypotheses regarding alcohol screening and brief intervention. It outlined the main aim, the objectives and the significance of the study. Significant concepts were defined and the study was delimited.

The chapter that follows reviews the literature on the nature of alcohol use.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, literature related to the study is reviewed. The chapter is divided into sub themes that include: alcohol use in South Africa, theoretical perspectives, categories of alcohol drinkers and the causes of alcohol use. It also reviews previous studies about the screening and intervention with regard to alcohol consumption.

2.2. PREVALENCE OF ALCOHOL USE IN SOUTH AFRICA

A report by the Medical Research Council in South Africa indicates that in 1997, just under half men (45%) and one-fifth of women (17%) 15 years and older in South Africa reported that they consumed alcohol. Rates of drinking differed substantially by population group and gender, with the highest levels of alcohol reported by white males (71%), followed by white females (51%), and Coloured males (45%). The lowest rates were reported by African and Asian females (12% and 9% respectively). For both men and women, higher rates of drinking were recorded in urban areas. For males the highest drinking levels (50% or more) were reported in the Free State and Gauteng and the lowest levels (28%). were reported in the Northern Province. For females, the lowest levels were also recorded in the Northern Province (9%), with the highest levels in the Free State, Western Cape and Northern Cape (23%-25%). For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year age groups (MRC, 1998; Flisher, Parry, Evans, Muller & Lombard, 2003).

These figures are likely to be inaccurate given the nature of broad household surveys, where respondents may be dishonest about behaviours that may be stigmatized or disapproved of in certain communities and where inadequate attention may be given to setting respondents at ease when they are asked sensitive questions (Gfroerer, Wright & Kopstein, 1997). Female drinking, in particular, is often disapproved of in many African communities and, as a result, is likely to be under-reported (Mphi, 1994; Siegfried, Parry, Morojele & Wason, 2001).

Pengpid, Peltzer and Van der Heever (2011) assessed the prevalence of alcohol use and associated factors among outpatients in an urban hospital in South Africa, and their study found that 41.2% of the men and 18.3% of the women were hazardous drinkers. In a sample of 1,532 selected patients, 3.6% of the men and 1.4% of the women met the criteria for probable alcohol dependence or harmful drinking. Globally, the prevalence of alcohol use is estimated to range from 4% to 29% for hazardous drinking and from less than 1% to 10% for harmful drinking (Reid, Feilin & O'Connor, 1999). Similar prevalence rates of hazardous or harmful alcohol use in health care settings have been reported from various African countries (Saunders, Aasland, Amusend & Grant, 1993; Chinyadza, Moyo, Katsumbe, Chisvo, Mahari, Cock & Mbengeranwa, 1993; Abiodun, 1996; Bekker & Van Vekden, 2003; Peltzer, 2006; Ward, Mertens, Flisher, Bresick, Sterling, Little & Weisner, 2008).

2.3. PREVALENCE OF ALCOHOL CONSUMPTION INTERNATIONALLY

Previous research in Australia found that 10% of people drank at levels considered to be harmful for long-term health, 7% at 'risky' levels, and 3% at 'high risk' levels. Twenty per cent of the people put themselves at risk of alcohol-related harm in the short term. Seventeen-and-a-half per cent of people had not consumed alcohol in the previous 12 months (Laslett, Room, Ferris, Wilkinson, Livingston & Mugavin, 2011).

In the USA the prevalence of alcohol use by adults over 18 years of age who were regular drinkers was found to be 50.9%. Among those who were infrequent drinkers and 18 years and above, the prevalence was 13.6% (National Health Interview Survey, 2012).

2.4. ALCOHOL USE GLOBALLY

According to the World Health Organization (2002), in 2000, the global burden of alcohol use in terms of death and disability was between 1.6% (for high-mortality developing countries) and 9.2% (for developed regions) of total Disability Adjusted Life Years lost (DALYs), accounting for 4.5 billion years lost. While South Africa is a high-mortality developing country, it has

recently been calculated that alcohol-related harm accounted for 7.1% of all deaths and 7.0% of Disability Adjusted Life Years Lost (DALYs) in 2000, resulting in 1.1 million life years lost in that year (Schneider, Norman, Parry, Plüddemann & Bradshaw, 2007). Alcohol was the third largest contributor to death and disability after unsafe sex/sexually transmitted infections and interpersonal violence. The three largest contributors to the burden specifically related to alcohol, included homicide and violence (40% of alcohol's burden), alcohol use disorder (15%) and road traffic injuries (15%).

It has been estimated that South African adult per capita alcohol consumption in 2005 was between 10.3 and 12.4 litres of pure alcohol. Of this consumption, 2.5 litres per person was homebrewed and illegally produced alcohol (Rehm, Room, Monteiro, Gmel, Graham, Rehn, Sempos, Frick & Jernigan, 2004). According to the World Health Organization (2002), 45% of men and 70% of women in Afro Region E (which includes countries like Ethiopia and South Africa) abstain from drinking alcohol. Therefore, while the consumption per adult is only 7.1 litres of pure alcohol in this region, consumption per adult is 16.7 litres per year (Rehm, Rehn, Room, Monterio, Gmel, Jernigan & Frick, 2003). It has been estimated that per capita consumption among drinkers in South Africa is likely to be even higher than the regional average (Parry, 2005). This gives South Africa one of the highest levels of alcohol consumption per drinker anywhere in the world, putting it at a similar level as countries such as the UK and the Ukraine (Rehm, *et al*., 2003).

Rehm, *et al*., (2003) indicate that the increased consumption of alcohol or heavy drinking is an important risk factor for many health problems and is thus a major contributor to the global burden of disease. According to the 2009 WHO report, the detrimental impact of alcohol was the third on the burden of disease and injury after unsafe sex and childhood underweight status. It exceeded that of many classic risk factors such as unsafe water and sanitation, hypertension, high cholesterol or the use of tobacco (WHO, 2009). Alcohol consumption has been identified as an important risk factor for illness, disability and mortality (Rehm, *et al*., 2004). In 1996, it was reported that in Australia excessive alcohol was responsible for 4.9% of the burden of disease.

Rehm, *et al*., (2003) has argued that alcohol consumption can be a direct cause or a partial cause of the following conditions and incidents:

- Cirrhosis of the liver;
- Infectious diseases;
- Diabetes;
- Pancreatitis;
- Unintentional and intentional injuries;
- Breast, oral, liver and colorectal cancers;
- Stroke, inflammatory heart disease and hypertension;
- Road traffic accidents;
- Memory lapse;
- Falling, suicide, and drowning.

2.5. ALCOHOL USE IN SOUTH AFRICA

The guidelines provided by the Food-based Dietary Guidelines (FBDGs) in South Africa include references to alcohol. The FBDG on alcohol intends to make a contribution towards encouraging those members of the South African population who misuse alcohol, particularly by binge drinking, to partake of low-risk drinking or sensible drinking. Low-risk drinking is defined (using Australian guidelines) as no more than four units of alcohol per day for men and no more than two units for women, with at least two alcohol-free days per week (Van Heerden & Parry, 2001).

South Africans consume well over 5 billion litres of alcoholic beverages per year. The figure could be nearer to 6 billion litres, depending on the estimate of the amount of sorghum beer consumed. Roughly two thirds of the total alcohol consumed in South Africa is malt or sorghum beer. In terms of alcoholic beverages this translates to roughly 4.2 billion litres or roughly 90%

of the alcoholic beverages consumed. Roughly 15% of the total alcohol consumed is wine (Myers & Parry, 2002).

Per capita consumption of alcohol in South Africa is between nine and ten litres per year, which places the country among the higher alcohol consuming nations. Since 1993 the level of per capita adult alcohol consumption appears to have been rising, after a decrease in 1990 and 1991 (Myers & Parry, 2002).

Based on the findings of the Department of Health's South African Demographic and Health Survey (SADHS) conducted in 1998 by the Medical Research Council (1998), just under half of men (45%) and one-fifth of women (17%), 15 years and older, reported that they consumed alcohol. For both sexes, the rate was 28%, which translates to 8.3 million South Africans who were 15 years or older. For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year group.

Risky drinking was defined as drinking five or more standard drinks per day for men and three or more drinks per day for women. While communal drinking is often also risky, respondents who reported communal drinking in the Medical Research Council (MRC) study were not classified as 'risky drinkers'. Rates of risky drinking for males and females were very similar and were roughly 4-5 times greater during weekends than on weekdays, with one-third of current drinkers drinking at risky levels over weekends. For both males and females, risky drinking at weekends appears to be highest among persons in the middle categories for ages 35-44 years for males and 45-54 years for females. Seven per cent of pregnant women acknowledged current drinking (MRC, 1998).

2.6. THEORETICAL PERSPECTIVES ON DRINKING PROBLEMS

There are many theories that can be used to explain behaviour related to alcohol consumption. Some of those theories are based on the psychological explanations of drinking behaviour while others are more medically based. For the purpose of this study, only three psychology based theories will be discussed in this section as the conceptualization of this study.

2.6.1. Social learning theory

The social learning theory is based on the idea that people behave the way they do largely because they have learned to behave in that way. According to the social learning theory, learning can take place on a number of levels with conditioning at one extreme and abstract thought and reflection at the other (Heather & Robertson, 1997). Classical conditioning as a way of learning happens this way: an unconditional stimulus produces an unconditioned response, and then a neutral stimulus is presented shortly before the unconditioned response. After this has happened several times, the neutral stimulus comes to have an effect similar to the unconditioned stimulus; it produces a similar response.

Conditioning plays an important part in behaviour (Heather & Robertson, 1997). Research shows that learning has a great effect on the development of harmful drinking behaviour. People learn how to drink, what to expect from drinking and to use drinking for certain purposes. People who have experienced rules about appropriate drinking learn those rules and rituals (although they may not always use what they have learned). Those who see mostly uncontrolled drinking with the intention of intoxication learn to drink that way (Heather & Robertson, 1997).

In instrumental learning, learning is strengthened each time a response is followed by satisfying consequences. Acts that are reinforced tend to be repeated. People are also shaped by the consequences of drinking. Human beings continue to behave in certain ways if they get positive consequences for the behaviour. If a person's social group drinks heavily and that person receives positive feedback from friends for drinking the same way, he or she will be more likely

to continue the pattern. If a person gets other rewards from drinking, for example, being more social or being less anxious he or she may also learn to use alcohol as a way of getting that reward and as a way of coping with uncomfortable and painful feelings. These positive consequences may be more emotionally powerful than negative ones like hangovers or family problems (Coon & Mitterer, 2012).

Modelling, as a way of learning, happens through observing the behaviour of others. In terms of alcohol consumption parents serve as models of behaviour for their offspring. Children imitate the patterns of behaviour set by their parents, whether it is abstinence, moderate drinking or heavy drinking (Herd, 1994; Windle, 2000). Parents are the agents by whom adolescents learn appropriate or inappropriate norms and values related to alcohol use (Herd, 1994). This theoretical construct has particular significance for explaining patterns of initiation into alcohol use, where the parent often serves as the first model of drinking behaviour. Often, an individual's first experience with alcohol occurs in the family setting, providing parents with the opportunity to moderate the child's interpretation of the meaning of alcohol use (Anderson, Bruijn, Angus, Gordon & Hastings, 2009). In addition, Tyler (2008) found that patterns of excessive alcohol use in parents influence children to a greater extent earlier in adolescence, before the influence of peers grows; first experiences with alcohol and initiation into its use are related to models of parental use acquired through social learning.

2.6.2. Psychosocial theories

All experts, including those who believe in the disease model, agree that psychological, social and environmental events are important elements in the development of problem drinking patterns (Heather & Robertson, 1997).

Habit is a learned element of drinking. People learn to use alcohol in certain situations, including developing the habit of drinking heavily. In the North, for example, people may learn the habit of drinking heavily each time they go to the bar, whereas they might not drink at all otherwise. Habit can be hard to change because it is a routine that people have developed without really thinking about it, a way of behaving that has become an automatic reaction. There is much

research that shows that if a person expects to be affected by alcohol in a certain way, she/he will in fact experience that effect (Heather & Robertson, 1997).

There have been experiments showing that even if people are drinking non-alcoholic drinks they can feel intoxicated (that is, they behave as if they are intoxicated and believe that they are intoxicated), if they believe that they are drinking alcohol. The behaviour that people expect alcohol to produce will consequently be the way they will behave. However, most people do not consciously realise that their beliefs influence their behaviour. Also, if people believe and expect that intoxication is a normal part of drinking, they may well drink to intoxication. If they believe they have no control over alcohol once they have a drink, they may well drink in an uncontrolled way. If people expect alcohol to lead to aggression, they may well act aggressively. Many studies show that alcohol-related violence is a learned behaviour, not a universal and automatic result of heavy drinking (Heather, 1995).

Alcohol may, however, make people less able to control anger and aggression. Cultures/societies develop attitudes, beliefs, expectations of effects and standards about alcohol use, as well as ways of discouraging unacceptable use (Graham, Leonard, Room, Wild, Pihl, Bois & Single, 1998). Penalties can be legal such as making drunk driving a criminal offence. They can also be less structured, but highly effective negative consequences like social shunning and gossip. The greatest problems seem to arise when a society tolerates heavy drinking and drunkenness rather than having strong clear rules about acceptable and unacceptable drinking behaviour and meaningful punishments (Parry, *et al.*, 2004).

Subcultures are smaller groups within the main society, for example, teenagers, friendship groups, or church members. Subcultures can also develop their own attitudes, rules, and expectations about drinking. For example, heavy binge drinking is often seen as normal and acceptable by college students. However, people who belong to religious groups that have strict rules against alcohol do not accept drinking at all (Parry, *et al.*, 2004).

Some people with certain personality characteristics and in certain environmental circumstances may be at greater risk of developing alcohol problems. For example:

• Certain mental disorders (e.g., anxiety, depression) may be more likely to lead to harmful alcohol use;

• People who have antisocial personalities (that is, they are aggressive, do not follow the rules of society, do not take responsibility for what they do, do not relate well to other people, etc.) are more likely to abuse alcohol;

• People whose social group drinks heavily may develop problems themselves;

• Highly stressful life events like isolation, violence and abuse may create a greater risk of alcohol abuse as a coping method.

Research also shows that "substance abuse frequently occurs within a social context characterized by social and economic disadvantage" (Parry, 2000). That is, people more often drink in problematic ways in situations of poverty and unemployment, low education level, unstable family conditions, unstable social environments, and lack of resources and supports. The connections between alcohol abuse and these other factors that affect health are complex. However, it is likely that when individuals do not have the tools to make a meaningful life, or feel a lack of secure rootedness in family and society, and/or do not have a sense of direction for a positive future, they may learn to use alcohol as a coping tool. This alcohol misuse then creates even more problems. To a great extent, then, alcohol misuse and problems arise out of personal psychological factors, learned social patterns, the rewards a person gets from drinking, and the person's expectations. Harmful and disadvantaged environmental, economic and social conditions increase the likelihood that people will develop problems (Parry, 2000; Kushner, Abrams & Borchadt, 2000; Jané-Llopis & Matytsina, 2006).

2.6.3. Harm Reduction Model

The harm reduction approach takes the holistic view that the essential goal of helping should be to decrease the "health and social problems associated with the use and control of alcohol and other drugs among all individuals, families and communities" (Marlatt, Larimer, Baer &

Quigley, 1993). It is a public health approach. Its goal is not necessarily to stop people from drinking, but to teach them how to drink without creating physical, legal, financial, or social problems for themselves and others. Harm reduction is not one particular strategy. It encompasses a variety of methods to help individuals control their drinking or their desire to drink. It includes counselling for other client issues either directly or through referrals to other care providers.

Abstinence is not a requirement in harm reduction methods, but it is always presented as an option. It is a fact that alcohol provides pleasure in many ways and most people either do not want to quit drinking completely, or they have mixed feelings. It is also a fact that some people simply should not drink at all, either temporarily (e.g., during illness, pregnancy, or if they are on medications, etc.) or permanently (e.g., those who have developed serious alcohol dependency). The harm reduction approach believes clients cannot be forced to do something they do not want to do, they have a right to choose what they want, and a reduction in problems is better than no change at all (Marlatt & Witkiewitz, 2002).

The counsellor does not take the position of being the authority telling clients what to do. Instead, the counsellor sets up a respectful and collaborative relationship that acknowledges clients' rights to participation, control, and ownership of their life decisions. Therefore, the counsellor helps clients determine what kind of change they want to accomplish (a specific cut-back level or abstinence) and then provides ideas and activities for reaching the goal. Clients' goals may change and their plans may change. There is much evidence that when people are allowed to make their own choices, quite a few in fact choose abstinence, sometimes immediately, sometimes later on. Furthermore, they will be more successful because they will be more committed to the goal. This is true in many areas of life. When people are ordered to do something, they may resist. Harm reduction methods are also extremely useful in treatment aftercare, and in helping clients manage drinking triggers and psychological habits (Marlatt, Blume & Parks, 2001).

Some people question the harm reduction approach. They believe that if alcohol abusers are told they can learn to control their drinking, it will lead to increased drinking and eventually the development of dependence. However, all the evidence shows just the opposite. Harm reduction can be highly successful in helping those with alcohol abuse disorders to reduce their drinking to levels that create no problems or at least fewer problems (Marlatt, *et al.*, 1993; National Institute for Alcohol Abuse and Alcoholism, 2000). It has also been shown to be a useful middle step in helping alcohol dependent people become abstinent. People trying to change heavy drinking patterns or achieve abstinence are not often immediately successful. It can take time and several attempts. Harm reduction provides a less stressful, less guilt-producing path to change while reducing community, family, and individual physical and mental harm. Harm reduction has been shown to be a powerful tool for change, but it must be presented appropriately (Marlatt & Witkiewitz, 2002).

It is not enough merely to tell people to cut down on their drinking or to stay away from alcohol. Alcohol misuse is not an isolated behaviour. Effective harm reduction counselling is a holistic process that helps people look at their whole lives and the role alcohol plays (Marlatt, Blume & Parks, 2001). Areas to be considered include the following:

• Assessing drinking levels and the possible future consequences of the risky drinking;

• Assessing readiness to change;

• Looking at underlying factors in harmful drinking (e.g., drinking cues or triggers, self-esteem, family problems, past trauma, etc.);

• Analysing the benefits and problems of current drinking;

• Setting goals;

• Preparing for possible positive and negative consequences of change;

• Monitoring/managing drinking behaviour and/or the desire to drink;

• Learning new ways of handling problems, dealing with emotions, relating to others, finding peace, getting what one wants, etc.

A longer period of such outpatient treatment (e.g. 10 to 12 sessions) may be necessary for those with serious alcohol and/or personal problems.

2.6.4. Motivational interview

Why does one session of basic advice work with some people and intensive treatment (even with aftercare) not work with others? Alcohol misuse is resistant to change. Evidence suggests that a person's readiness to change is a major factor in success. No change is possible unless the person acknowledges a problem and wants to do something about it. As in other areas of life, people change only when they have decided there is a need to change. Experts agree that empathic (understanding) motivational interviewing is an effective treatment tool that helps clients come to their own realization of negative consequences and the need for change (Baer, Rosergren, Dunn, Wells, Olge & Hartzler, 2003).

One model increasingly used by many alcohol treatment programmes is the Stages of Change model. This model was originally developed more than 20 years ago to help people stop smoking, but has been found to be an effective tool in many kinds of change. This approach looks at behaviour change as a process that depends on the person's thinking about alcohol use and problems.

Five steps of change according to Prochaska's motivational interview

• Pre-contemplation

During this stage, the person might have some awareness and concern about his/her excessive/inappropriate drinking, but does not really acknowledge that there is a problem. For example, bosses or family may have said something or the person may have been involved in a fight while drunk, etc. She/he may think about changing sometime, but not in any definite way. Counsellors at this stage gently help the client to come to the conclusion that perhaps there is a reason to change (Prochaska, DiClemente & Norcross, 1992).

• Contemplation

The person decides to do something about his/her drinking, although there are probably mixed feelings. The person may be determined that she/he will change, but not yet. At this point, the person will be more willing to discuss the pros and cons and options. Counselling focuses on helping this person to see the negative consequences of drinking alcohol that are already there in his/her life (Prochaska, *et al.*, 1992).

• Preparation

The person makes an active decision and commitment to change. The counsellor helps the client gather information, assesses options and considers positive and negative consequences of each option. This is an important stage because this is the beginning of a plan. The plan must be based on sufficient information and on the client's needs.

• Action

At this stage the person is fully committed and begins the plan to cut down alcohol consumption or stop drinking. The person uses strategies that will lead to the achievement of the goals set.

• Maintenance

The person is following the plan and uses strategies to stay on track. The person practises the new strategies to help him/her to stay on track.

• Relapse

As new habits do not come easily, most people will probably fall back into earlier patterns at least occasionally. It is important to help them understand that they may get off track, but they can plan how to get back on track. Relapses are excellent learning situations for examining what led this to happen and what can be done the next time to prevent it from happening again. People

may go back and forth between stages several times before a change is complete. They should simply be helped to work through the issues and move on again (Prochaska, *et al.*, 1992).

Principles of motivational interview

Miller and Rollnick (2002) describe four main principles that are essential in motivational interviewing as follows:

• Expressing empathy:

A counsellor must express empathy as it helps build a trusting relationship (respect, acceptance of what the client says and how she/he sees things, understanding of feelings and circumstances, encouragement of expression of thoughts and feelings, without counsellor judgment).

• Developing discrepancy:

The counsellor helps clients who believe they do not have a problem to see that the belief does not fit with the facts of their lives. For example, the client may say that alcohol is not a problem or that he has a job, his girlfriend does not mind his drinking, etc. At the same time he might also mention that he is off work for a couple of days a week because of hangovers and that he and his girlfriend have been arguing a lot. This contradicts the first statements, but at this point the counsellor would ask some non-confrontational questions related to those events, which encourages the client to think about the situations and the possible role of alcohol. However, the client needs to make the connections her/himself, not the counsellor.

• Rolling with resistance:

If the client denies problems even though they may be obvious, or resists reviewing her/his behaviour, the counsellor should not argue. Instead, the counsellor should eventually, gently turn that resistance back in a way that gets the client thinking again. For example, "OK, I know what you're saying. But there's something you mentioned last time that I don't understand. . . . Can you tell me more about . . . ?"

• Supporting self-efficacy: The counsellor should always make it clear that clients have the ability to make the changes they want, have control over their lives and have personal strengths and resources that make them capable. The counsellor believes in the client and the client learns to believe in him/herself.

Once clients themselves have decided that they may need to do something about their problem, the counsellor and client can move to the next stage which is making a plan. Motivational interviewing is an important part of all helping strategies, from brief counselling to residential treatment (Fleming, Barry, Manwell, Johnson & London, 1997).

2.6.5. Health belief model

The Heath Belief Model (HBM) is commonly used in health education and health promotion (Glanz, Rimer & Lewis, 2002). It was developed in the 1950s in an effort to explain why screening programmes offered by the U.S Public health Service, especially for tuberculosis, were not very successful (Hochbaum, 1958). The model propositions that health-seeking behaviour is influenced by a person's perception of a threat posed by a health problem and the value associated with actions aimed at decreasing the risk (Hochbaum, 1958). Personal perception is influenced by a wide range of interpersonal factors affecting behaviour.

The Health Belief Model has four main hypotheses, namely perceived seriousness, perceived susceptibility, perceived benefits and perceived barriers (Glanz, Rimer & Lewis, 2002). Each of these hypotheses may be used on its own or combined with others to explain behaviour. The model was further modified to include cues to action, motivating factors and self-efficacy.

Perceived seriousness explains how an individual either changes or maintains a detrimental behaviour based on how serious they believe the consequences of maintaining the behaviour are.

This perception is either based on medical information or personal beliefs about the consequences of the behaviour if it is not changed.

The greater the perceived risk, the greater the likelihood of engaging in risk-reducing behaviour; this is termed perceived susceptibility. If individuals recognize that their behaviour when they are under the influence of alcohol makes them vulnerable to many health hazards, they would try to engage in risk-reducing behaviour. However, if an individual does not believe that their behaviour is risky, the chances are that the individual will continue indulging in risky behaviour. When perceived seriousness is combined with perceived susceptibility, good health behaviour is promoted (Glanz, Rimer & Lewis, 2002).

The next hypothesis is perceived benefits. This is a personal opinion of the value of a new behaviour in decreasing the risk of contracting a disease. New health behaviour might be adopted if, by doing so, one perceives that it will reduce one's risk of developing a disease. If an individual perceives that reducing the amount of alcohol they take, avoiding certain places which may trigger alcohol consumption or even deciding to stop drinking altogether will reduce his/her risk of experiencing problems arising from his/her drinking behaviour; the chances are that he/she will change their behaviour (Glanz, Rimer & Lewis, 2002).

Perceived barriers are an individual's appraisal of the stumbling blocks that are in the way of adopting new health behaviour. For instance, a female student who lives in a university residence where other students perpetually host parties may perceive that as a barrier to her changing her drinking habits. To adopt healthy behaviour, one has to believe that the benefits outweigh the consequences of continuing with the old risky behaviour (Centre for Disease Control and Prevention, 2004).

Modifying variables, such as culture, education level, skill, motivation and previous experiences, were added to the four hypotheses. These are the characteristics of an individual that influence personal views. Previous experiences increase the perception of vulnerability as one would be

aware of exposure to risk. They may also reduce one's perception of the seriousness of the behaviour because the consequences were dealt with easily (Glanz, Rimer & Lewis, 2002).

Cues to action are events, people or things which motivate people to act or change behaviour. These include a reminder by a family member, mass media campaigns (Graham, 2002) and advice from others (Ali, 2002). Specifically, significant others who constantly remind individuals about their behaviour or reproach the use of alcohol, or posters warning the public of the dangers of alcohol abuse serve as cues to action.

Self-efficacy occurs when one believes that one is able to accomplish something (Bandura, 1977). Bandura proposes that, generally, individuals do not engage in a new experience unless they believe that they can go through with it. An individual may believe that changing his or her behaviour will be beneficial. However, if their perception of potential barriers is greater than that of perceived benefits, they will probably not adopt new behaviour.

2.7. CONCEPTUALIZATION OF ALCOHOL CONSUMPTION

Drink	Volume	% of alcohol in a drink	Units of alcohol
Can of lager or cider	340 ml	5%	1 unit
Glass of wine	120 ml	12%	1 unit
A single tot of spirits(whisky, gin or vodka	25 ml	43%	1 unit
A small glass of liqueur or aperitif	25 ml	30 %	1 unit
Cartoon of ordinary commercial sorghum beer	500ml	3%	1 unit

Table 2.1: Description of alcoholic beverages

2.7.1. Categories of alcohol drinkers

According to WHO (2000) there are different categories of alcohol drinkers ranging from those who drink safely and sensibly to those who are dependent on alcohol. These categories depend on the quantity of alcohol consumed and the frequency of drinking. These categories will be discussed below.

2.7.1.1. Safe and sensible drinking

Sensible drinking is defined by WHO (2000) as the consumption of alcohol, while still remaining\ in control of one's own body, mind and behaviour. People who fall under this category drink only a limited amount of alcohol and do not drink every day. Sensible drinking for men is four units of alcohol per occasion, and three units for women on one occasion as per the table above. It is advisable not to drink at all in the following situations:

- When pregnant or breast feeding;
- When very tired;
- When food has not been consumed for several hours;
- When driving and operating machinery;
- When taking medicine;
- If one is not in control of one's drinking.

2.7.1.2. Low risk drinking

The social drinker consumes alcohol in amounts and circumstances that appear socially acceptable. However, this person may develop a serious alcohol problem if there is an inclination to over-indulge or occasionally to use alcohol to cope with stress (Edwards, Marshall & Cook, 1997).

2.7.1.3. Harmful drinking

Harmful drinking is drinking alcohol that results in adverse effects; for example, physical or psychological harm. Harmful drinkers consume alcohol above the recommended daily, weekly, or per-occasion amounts; that is, more than three standard drinks for men and more than two standard drinks for women and all above 65 years of age.

The harmful drinker drinks in socially appropriate circumstances, but actively seeks an occasion for drinking in a social situation. He or she has more than two drinks every day, continuously seeks out situations in which to drink, and may often over-consume but not exceed the alcohol consumed by her/his peers. He or she may never appear drunk or seem to be affected in social or work routines, but as drinking escalates, it becomes increasingly linked to seeking physical or psychological relief. Problem drinkers emerge from this population. Neither the person nor his/her acquaintances suspect an alcohol abuse problem (Edwards, *et al.*, 1997).

2.7.1.4. Hazardous drinking

Harmful drinking is the consumption of alcohol that places a person at risk for adverse health effects. Alcohol consumption is associated with social consequences such as problems with family, fighting and financial problems. Most people who experience alcohol-related problems have mild to moderate problems. These people are unlikely to meet diagnostic criteria for severe alcohol dependence or alcoholism, despite their frequent drinking and occasional negative consequences from drinking. The majority of these groups are more appropriately classified as problem drinkers (Burge & Schneider, 1999).

The problem drinker gets drunk on occasion and also exhibits medical, legal, social or psychological consequences of excessive alcohol consumption; and makes or thinks of making attempts at cutting down or quitting. Functioning may vary from seemingly intact behaviour to difficulty in coping. The drinker may deny a drinking problem and attribute blame to external events or persons. Denial is common even among those with multiple arrests for drunken driving (Edwards, *et al.*, 1997).

2.7.1.5. Alcohol dependence

The alcohol-dependent drinker tries to consume the same excessive amount of alcohol regardless of mood situation, although external circumstances might constrain drinking for a time. Most continue to work, some even in high positions. Alcohol is given top priority in all situations; for example, one goes to a party to drink, not to socialize. Tolerance to alcohol develops, and withdrawal symptoms may be noted during the workday when the blood alcohol level drops. Drinking at lunch and during the cocktail hour is needed to relieve symptoms. The patient is aware of the compulsion to drink but is difficult to reach unless family or the employer notes that there is a problem or serious medical complications develop (Edwards, *et al.*, 1997).

2.7.1.6. Severely alcohol dependency

This is a severely deteriorated drinker who maintains a constant state of intoxication; has no care for his or her person or surroundings; undergoes periodic hospitalization for detoxification and for medical care necessary after alcohol-related trauma or organ damage (Edwards, *et al*., 1997).

2.7.2. The role of alcohol in South African history

During pre-colonial days, the consumption of alcohol was preserved for elders, and other senior or authority figures, including health practitioners and healers. Solitary drinking was not tolerated. Drinking did not occur every day but only on special occasions such as religious feasts, funerals and marriage ceremonies. Drinking was less common among youth and women of childbearing age. These were only allowed to drink only when engaging in rituals and religious ceremonies (Gumede, 1995). Traditionally in South Africa, alcohol served many purposes. It was used as a means of payment, and for strengthening friendships, and was associated with manhood and the strengthening of the body (Setlalentoa, Pisa, Thekisho, Ryke & Loots, 2010).

Since then alcohol has been prominent in South Africa, both socially and politically. Women used to cultivate maize and sorghum to produce food and ferment beer. Traditional African beer played an important role in the lives of black people of South Africa, both culturally and religiously. People would drink alcohol when traditional ceremonies and feasts were held

(Gumede, 1995). According to Gumede (1995), two feasts recorded in the history of black people are the feast of the first fruits (Umkhosi Wokweshwana) which took place after the first harvest, and the festival of the Queen of the Rainbow (Umkhosika Nonkhubulwana) involved the consumption of low alcohol content beer. These feasts were celebrated by women after the first rainfall.

Gumede (1995) argues that the British colonial government prohibited drinking among non-white population groups as it believed that alcohol caused social decay and disorder among blacks. With the arrival of European liquor called "Cape Smoke", Africans began to move away from traditional African beer to liquor. This was seen as unacceptable by European farmers because they believed alcohol made Africans disobedient. The disobedience was displayed when workers were under the influence of liquor. They no longer took orders, would not come to work, and would even talk back to their employers. This led to many laws being passed to control drinking by Africans.

Among white South Africans, malt, beer and wine were popular drinks, particularly during mealtimes and social functions such as weddings, communion at church (wine) and sporting events. To black South Africans, among many, alcohol is still a symbol of personal and economic freedom (Gumede, 1995).

During modern times, drinking is widespread among different members of the community. With the laws/controls that regulated production, and the sale and access to alcohol by Africans led to the eruption of illegal liquor outlets, such as shebeens. These are private homes where alcohol is brewed, sold and consumed. The informal/illegal liquor sector in South Africa is not regulated and operates outside the law. It comprises hundreds of small home brewers of sorghum beer. The informal liquor sector also consists of as many as 200 000 liquor outlets, largely shebeens. In South Africa, the alcohol industry is a major source of employment and government revenue (Gumede, 1995; Parry & Bennets, 1998; Setlalentoa, *et al*., 2010).

2.8. CAUSES OF DRINKING PROBLEMS

Drinking behaviour, and the problems with which it is associated, are determined by multiple, interacting factors that concern both an individual and his or her environment. Those factors will be discussed in the following section.

Research shows that many adolescents start to drink at very young ages. In 2003, the average age of first use of alcohol was about fourteen, compared to about seventeen-and-a half in 1965 (Newes-Adeyi, Chen, Williams & Faden, 2005; SAMHSA, 2003). People who reported starting to drink before the age of 15 were also four times more likely to report meeting the criteria for alcohol dependence at some point in their lives (Grant & Dawson, 2003). In fact, new research shows that the serious drinking problems (including what is called alcoholism) typically associated with middle age, actually begin to appear much earlier, during young adulthood and even during adolescence.

As children move from adolescence to young adulthood, they encounter dramatic physical, emotional, and lifestyle changes. Developmental transitions, such as puberty and increasing independence, have been associated with alcohol use. So in a sense, just being an adolescent may be a key risk factor not only for starting to drink, but also for drinking dangerously (Newes-Adeyi, *et al.*, 2005).

2.8.1. Risk-Taking

Research shows that the brain keeps developing well into the twenties, during which time it continues to establish important communication connections and further refines its function. Scientists believe that this lengthy developmental period may help explain some of the behaviour which is characteristic of adolescence; for example, their tendency to seek out new and potentially dangerous situations. For some teens, thrill-seeking might include experimenting with alcohol. Developmental changes also offer a possible physiological explanation for why teens act so impulsively, often not recognising that their actions, such as drinking, have consequences (Grant & Dawson, 1998).

2.8.2. Expectancies

How people view alcohol and its effects also influences their drinking behaviour, including whether they begin to drink and how much they drink. An adolescent who expects drinking to be a pleasurable experience is more likely to drink than one who does not. An important area of alcohol research is focusing on how expectancy influences drinking patterns from childhood through adolescence and into young adulthood (Lang & Strizke, 1993; Smith, Goldman, Greenbaum & Christiansen, 1995; Zucker, Kincaid, Fitzgerald & Bingham, 1995; Dunn & Goldman, 1996). Beliefs about alcohol are established very early in life, even before the child begins elementary school (Noll, Zucker & Greenberg, 1990). Before age 9, children generally view alcohol negatively and see drinking as bad, with adverse effects. By about age 13, however, their expectancies shift, becoming more positive (Dunn & Goldman, 1996; Dunn & Goldman, 1998). As would be expected, adolescents who drink the most, also place the greatest emphasis on the positive and arousing effects of alcohol.

2.8.3. Sensitivity and tolerance to alcohol

Differences between the adult brain and the brain of the maturing adolescent may also help to explain why many young drinkers are able to consume much larger amounts of alcohol than adults (Johnston, O'Malley & Bachman, 2003) before experiencing the negative consequences of drinking, such as drowsiness, lack of coordination, and withdrawal/hangover effects (Spear, 2000; Spear & Varlinskaya, 2005). This unusual tolerance may help to explain the high rates of binge drinking among young adults. At the same time, adolescents appear to be particularly sensitive to the positive effects of drinking, such as feeling more at ease in social situations. Young people may drink more than adults because of these positive social experiences (Spear, 2000; Spear & Varlinskaya, 2005).

2.8.4. Personality characteristics and psychiatric comorbidity

Children who begin to drink at a very early age (before age 12) often share similar personality characteristics that may make them more likely to start drinking. Young people who are disruptive, hyperactive and aggressive are often referred to as having conduct problems or being

antisocial. Those who are depressed, withdrawn, or anxious may be at the greatest risk of developing alcohol problems (Zucker, Wong, Puttler & Fitzgerald, 2003). Other behaviour problems associated with alcohol use include rebelliousness (Brook, Whiteman, Finch & Cohen, 1995), difficulty avoiding harm or harmful situations (Jones & Heaven, 1998), and a host of other traits seen in young people who act without regard for rules or the feelings of others. This is known as dis-inhibition (Moss & Kirisci, 1995; Colder & Chassin, 1997; Colder & O'Connor, 2002).

2.8.5. Hereditary factors

A strong family history of alcohol-related disorders indicates a vulnerability to alcohol-use disorder. About 40-60 % of the risk is explained by genetic factors and the remainder is a combination of genetic factors and the environment (Rodseth, 2012). Some of the behavioural and physiological factors that converge to increase or decrease a person's risk of developing alcohol problems, including tolerance to alcohol's effects, may be directly linked to genetics. For example, being a child of an alcoholic or having several alcoholic family members places a person at greater risk of developing alcohol problems. Children of alcoholics (COAs) are between four and ten times more likely to become alcoholics themselves than are children who have no close relatives with alcoholism (Russell, 1990). COAs also are more likely to begin drinking at a young age (Donovan, 2004) and to progress to developing drinking problems more quickly (Grant & Dawson, 1998).

Research shows that COAs may have subtle brain differences, which could be markers for developing later alcohol problems (Tapert & Schweinsburg, 2005). Using high-tech brain-imaging techniques, scientists have found that COAs have a distinctive feature in one brainwave pattern (called a P300 response) that could be a marker for later alcoholism risk (Hill & Steinhauer, 1993).

Some studies suggest that these brain differences may be particularly evident in people who also have certain behavioural traits, such as signs of conduct disorder, antisocial personality disorder,

sensation-seeking, or poor impulse control (Tarter, Altermen & Edwards, 1985; Schuckit & Smith, 1997; Schuckit, 1998; Bauer & Hesselbrock, 1999a; Bauer & Hesselbrock, 1999b). Studying how the brain's structure and function translates to behaviour will help researchers to better understand how pre-drinking risk factors shape later alcohol use; for example, does a person who is depressed drink to alleviate his or her depression, or does drinking lead to changes in his brain that result in feelings of depression?

Studies have confirmed that there is a genetic component to a drinking behaviour and drinking problems, in addition to the undeniably important influences of the environment (Brook, *et al.*, 1995; Parry & Bennets, 1998; Botvin & Kantor, 2000). Behaviour such as alcohol consumption cannot be totally understood on the basis of genes or environment alone. Instead, it must be seen as the product of the interaction between a variety of genetic and environmental influences. The individual is more or less predisposed to heavy drinking, or to a particular alcohol-related problem or to become depend upon alcohol. This level of predisposition determines the risk or the probability of being a heavy drinker or of suffering from a particular drinking related problem (Edwards, *et al.*, 1997; Parry, *et al.*, 2004).

2.8.6. Environmental Aspects

Drinking behaviour reflects a complex interplay between inherited and environmental factors. The implications of environmental factors in causing alcohol drinking are only beginning to be explored in adolescence (Rose, Dick, Vicken & Kaprio, 2001). What influences drinking at one age may not have the same impact at another. As Rose, Dick, Viken & Kaprio (2001) show, genetic factors appear to have more influence on adolescent drinking behaviour in late adolescence than in mid-adolescence.

Environmental factors, such as the influence of parents and peers, also play a role in alcohol use (Halpern-Felsher & Biehl, 2004). For example, parents who drink more and who view drinking favourably may have children who drink more, and an adolescent girl with an older or adult boyfriend is more likely to use alcohol and other drugs and to engage in delinquent behaviour.

Researchers have examined other environmental influences as well, such as the impact of the media (Saffer, 1996; Parry, 2002). Today, alcohol is widely available and aggressively promoted through television, radio, billboards, and the Internet. Researchers have studied how young people react to these advertisements (Tibbs & Parry, 1994; Parry, 2002). In a study of learners in Grades 3, 6 and 9, those who found alcohol advertisements desirable were more likely to view drinking positively and to want to purchase products with alcohol logos (Austin & Knaus, 2000). Research results are inconclusive, however, on whether these positive views of alcohol actually lead to underage drinking.

2.8.7. Political and economic factors

Some political and economic circumstances, like reducing the real price of alcohol, tend to increase the overall consumption of alcohol by the population (Parry, 2005). Similarly, measures which make alcohol more readily available by reducing restrictions on its supply also tend to increase consumption. Thus, major influences upon per capita consumption in a population include factors amenable to political manipulation, such as taxation, licensing laws and trade agreements. Manipulation of such influences can have an enormous impact on the level of alcohol consumption of a population. Conversely, failure to utilize such controls can allow alcohol consumption to escalate and related problems to reach epidemic proportions (Edwards, *et al*., 1997; Parry, 2005).

2.8.8. Socio-cultural factors

The availability of alcohol, affordability of alcohol and acceptability of alcohol plays an important role in causing drinking problems. These factors are determined to a large degree by social and cultural values. However, these influences operate at various levels; for example, national and racial, religious, occupational and family influences may all play a part. Some cultures and societies, for example Islamic culture, promote total abstinence. At the other extreme are permissive culture;, for example Mediterranean countries, where drinking is actively endorsed. Such countries usually have high rates of morbidity attributable to alcoholic liver diseases (Edwards, *et al*., 1997; Parry & Bennets, 1998).

Between these extremes there may be a mixture of cultural influences encouraging or discouraging drinking; for example, in Jewish societies drinking is generally socially accepted, but strong negative connotations are attached to deviant drinking behaviour such as public drunkenness.

Culture can influence the pattern and context as well as the amount of alcohol consumption. Patterns of alcohol consumption may, in turn, be important determinants of a drinking problem. In France, habitual drinking of wine with meals is associated with a relatively high, but constant per capita consumption, which predisposes one towards chronic medical complications such cirrhosis and certain cancers (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2006).

Culture may also influence the way in which people behave when intoxicated. Family culture may also be an important influence on drinking. In addition to genetic influences, it seems likely that children will inherit heavy drinking patterns by virtue of learning this behaviour and any associated values and beliefs from their parents. However, this does not necessarily mean that all heavy-drinking parents produce heavy-drinking children (Edwards, *et al*., 1997).

2.8.9. Stress and life events

Major life events and everyday hassles both appear to increase the amounts that people drink. This may be explained on the basis that alcohol relieves anxiety and is thus used as a means of coping with stress. An increased frequency of life events usually precedes the onset of alcohol misuse (Sayette, 1999; Arch, Craske, Stein, Sherbourne & Roy-Byrne, 2006). However, evidence from research conducted is not consistent and heavy drinking tends to cause further stress in the form of the problems such as divorce, unemployment and ill health. There is also evidence that alcohol can exacerbate anxiety rather than relieve it (Edwards, *et al*., 1997; Arch, *et al*., 2006; Jané-Llopis & Matsytsina, 2006).

Depression and anxiety is consistently predicted among pregnant women who continue to use alcohol antenatally (Homish, Cornelius, Richardson & Day, 2004). Depression is argued by some as a justification for both initiating and maintaining alcohol and substance use in pregnancy. In women with alcohol and/or substance use disorders, perceived stress is associated with increased use and increased risk of relapse. In South Africa pregnant women tend to have high levels of perceived stress and pose a significant and public health problem (Vythilingum, Roos, Faure, Geerts & Stein, 2013).

2.8.10. Contextual drinking problems

Drinking is a perfect example of a contextual problem. Relatively modest alcohol consumption, which would cause no social, psychological or medical problems in most other contexts, may be the cause of serious injury or death when the drinker is also the driver of a car. Similar considerations also apply to other forms of transportation and safety-sensitive environments (Edwards, *et al*., 1997).

2.9. FACTORS THAT INFLUENCE ALCOHOL CONSUMPTION

Several factors contribute to an individual's decision to drink or not to drink alcohol on any given occasion. These factors are discussed below.

The individual is usually influenced to drink alcohol by the immediate environment, such as the nature of the occasion, the individual's special desire, physical and mental state and also the degree of peer pressure. In addition, socio-cultural influences and historical and contemporary factors contribute to an individual's attitudes, beliefs and values regarding the use of alcohol. These may include religious, ethnic and family customs (Fishman, 1992; Parry & Bennets, 1998).

However, compared with the circumstances of the immediate situation, socio-cultural influences have less effect on an individual's decision to drink. In many cases, persons with particular

beliefs and expectations about drinking come into contact with people who have different attitudes to alcohol use. Thus, an individual may be placed in a situation that demands social drinking at a level that he or she would previously have considered to be alcohol misuse (Fishman, 1992).

Factors in alcohol misuse are likely to include: peer pressure (particularly among young persons) and communal drinking among adults; availability, particularly in more disadvantaged communities; the falling price of certain kinds of alcohol products (e.g. malt beer and brandy) relative to the consumer price index; chemical dependence on alcohol; poor social conditions and boredom; a lack of social controls to deal with those misusing substances; and societal attitudes in general (Rocha-Silva, Miranda & Erasmus, 1996; Parry & Bennetts, 1998).

Ghuman, Meyer-Weitz and Knight, (2012) found in their study that 54 % of students had used alcohol before, 14,5% had had their first drink before the age of 13, and 32% engaged in binge drinking. Students, who were more likely to have used alcohol, were older, male, white and had often seen their fathers drunk, had friends who frequently drank alcohol. With regard to availability and access, for example, there are currently almost 23 000 licensed liquor outlets with an estimated 150 000 to 200 000 unlicensed outlets, yielding approximately one liquor outlet for every 190 persons in South Africa (Parry & Bennetts, 1998). Research has shown that school-going youth find it easy to purchase alcohol from bottle stores, supermarkets, bars and shebeens (Tibbs, Parry, Stretch & Brice, 1994).

2.10. CONSEQUENCES OF ALCOHOL CONSUMPTION

According to the Constitution of the WHO, health is "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity". This definition, therefore, takes into account not just physical and mental harms, but also social harms, both for the drinker and for others.

Alcohol affects virtually every organ system in the body (Schukit, 2009). A few examples of harm to others are included in the analysis of alcohol's contribution to the global burden of disease. These include perinatal conditions attributable to the mother's drinking during pregnancy, and injuries, particularly assault injuries. However, the scope of alcohol-related social harm and of harm to others stretches well beyond these items. Thus, a recent study in Australia (Laslett, *et al*., 2011) identified the following harms to others associated with drinking:

- Harms identified in records—these included deaths and hospitalizations (e.g., attributed to traffic injuries because of driving under the influence), child abuse or negligence cases involving a caregiver's drinking, and domestic and other assaults;
- Harms based on survey reports — these included negative effects on co-workers, household members, other relatives and friends, strangers, and on the community as a whole.

These effects were quite prevalent. Thus, the researchers estimated that within one year, more than 350 deaths were attributed to drinking by others, and more than 10 million Australians (or 70% of all adults) were negatively affected by a stranger's drinking (Laslett, *et al*., 2011).

2.10.1. Health impacts of alcohol

In 2000, alcohol was responsible for 4% of the global burden of disease, which is more or less equal to the damage caused to society by tobacco use (4.1%). Alcohol was estimated to have caused 1.8 million deaths or 3.2% of all deaths globally. Contribution to the global burden of disease was considerably higher in developed countries (9.2%) than in developing countries, partly owing to the greater consumption of alcohol in these countries and partly owing to the high burden from other diseases in developing countries (such as AIDS, Malaria, childhood illnesses, etc.). Alcohol consumption contributes to disease, injury, disability and premature death more than any other risk factor in developing countries with low mortality rates. In high mortality regions including Afro Region E, the GBD was calculated to be 1.6%. For South Africa the estimated burden owing to alcohol (death and disability) has been calculated to be 7.0%, 10.5% for males and 3.1% for females (Schneider, *et al*., 2007)

2.10.2. Direct biological Impacts

Schneider, *et al.*, (2007) argue that both acute intoxication and chronic long-term excessive drinking may have adverse effects on the brain, central nervous and muscular system, liver, heart (though there are also some positive effects for certain groups of people), blood cells, gastrointestinal system, respiratory system, reproductive system, as well as the immune system. Alcohol use contributes to more than 60 diseases and conditions. The conditions mentioned below are some of the most important (the prevalence rates of most of these diseases in South Africa are generally not known and, unless specifically stated, rates refer to international figures).

2.10.3. Alcoholic liver disease

Alcohol is absorbed quickly into the blood system, passes through organs where it oxidizes slowly and can cause damage. The most common organ affected is the liver. Mortality studies have consistently demonstrated that heavy drinkers die from liver disease at a much higher rate than the general population. Types of alcoholic liver disease include alcoholic fatty liver (prevalent in about 20% of heavy drinkers); alcoholic hepatitis; and alcohol cirrhosis (about 10-15% of people with alcohol dependence develop cirrhosis). Alcohol also increases the risk of developing liver cancer (Schneider, *et al*., 2007; Reuben, 2007).

Alcohol hepatitis is characterized by the inflammation (necrosis) of the liver, jaundice and abdominal pain. Scar tissue may replace healthy tissue, leading to a process of "fibrosis". The condition is reversible with abstinence. Alcohol cirrhosis is the most advanced form of liver disease. The liver is characterized by extensive fibrosis that stiffens blood vessels and distorts the internal structure of the liver. This damage results in severe functional impairment and may result in secondary malfunction of other organs, including the brain and kidneys. The amount of alcohol consumed and the duration of that consumption are closely associated with cirrhosis. More importantly, as consumption increases, the risk of cirrhosis is greater for women than for men. Moreover, consumption of alcohol without food results in higher risk than with food. Cirrhosis can stabilize with abstinence. While alcoholic fatty liver, alcohol hepatitis and cirrhosis

have been considered to be sequentially related, (that is, progressing in this order) this is not always the case. Some cirrhosis develops without hepatitis and hepatitis may have a sudden onset and a rapid course resulting in death even before cirrhosis can develop (Schneider, *et al*., 2007; Reuben, 2007).

2.10.4. Effects on the heart

Alcohol can be beneficial or harmful to the cardiovascular system depending on the amounts consumed and the characteristics of the consumer. Low to moderate consumption has been shown to have coronary benefits for people who are 40 years and older. However, according to the WHO (2005):

> In some industrialized countries where the condition is common and injuries and violence are rare, alcohol consumption may prevent about as many deaths as it causes in some segments of the population. The patterns of drinking in many countries, however, often with heavy episodic consumption, are likely to increase rather than decrease the occurrence of coronary heart disease.

Questions have also been raised regarding the transferability of these findings of the benefits to developing countries. As coronary heart disease is associated with diet, lifestyle and age, and given that the diet of many traditional developing countries is relatively low in fat and high in fibre (a factor that is often given as one of the reasons for the comparatively low incidence of heart disease in developing countries), the findings of the protective effects may not be applicable. Moreover, even if moderate drinking is protective, heavy alcohol consumption could damage the cardiovascular system, causing heart muscle disorders, irregular heart rhythms, high blood pressure and strokes (Schneider, *et al*., 2007).

2.10.5. Effects on blood cells

Alcohol has numerous adverse effects on blood cells and their functions. Heavy drinking can cause generalized suppression of blood cell production and the production of abnormal blood cell precursors that cannot manufacture cells. There is evidence that blood pressure increases

with increased drinking. A study in India found alcohol consumption to be a significant risk factor for hypertension. A meta-analysis found that 11% of cases of hypertension in males and 6% in females could be directly causally attributed to alcohol (Schneider, *et al*., 2007).

2.10.6. Gastrointestinal and respiratory systems

Alcohol can interfere with the structure and function of the gastrointestinal tract. For example, alcohol can impair the muscles separating the oesophagus from the stomach increasing the risk of cancer. Alcohol interferes with the muscle movement of the small and large intestines and the absorption of nutrients into the body (Schneider, *et al*., 2007).

Epidemiological research in developing countries has found a causal link between heavy alcohol consumption and pancreatitis. Eighty per cent of cases of chronic pancreatitis were attributable to alcohol.

A meta-analysis of more than 200 studies found that alcohol strongly increased the risks of various types of cancers (oral cavity, pharynx, oesophagus and larynx) and also revealed statistically significant increases in risk for cancers such as stomach, colon, rectum, liver, breast and ovaries (Schneider, *et al*., 2007).

2.10.7. Reproductive system

In men, alcohol can result in loss of libido, reduced potency, shrinking in size of testes and penis, reduced or absent sperm formation and infertility. In women, alcohol has been found to result in menstrual irregularities, shrinking of breast and external genitalia, as well as and sexual difficulties. It also affects the female reproductive capacity (Schneider, *et al*., 2007).

2.10.8. Immune system

Alcohol consumption affects various components of the immune system. Both chronic and acute alcohol consumption disrupts the immune system functions (Szabo & Mandrekar, 2009). It is evident from animal and in-vitro studies that alcohol impairs various aspects of the immune

system and, particularly, increases the susceptibility to HIV infection. It may also interfere with adherence to anti-retroviral treatment. Some evidence also suggests that alcohol may lead to accelerated progression of the disease (Schneider, *et al*., 2007).

2.10.9. Effects on the brain and central nervous system

Alcohol directly affects brain function in a number of ways. At a behavioural level, neurological disorders resulting from alcohol can result in changes in emotions, personality, impaired perception, learning and memory. The detrimental effects of alcohol on the brain may be similar to Alzheimer's disease. It has been established from autopsies that the brains of people with severe alcohol dependency are smaller, lighter and exhibit greater atrophy than those of non-alcoholics. Neuropsychological studies of people with chronic alcohol dependence have reported cognitive deficits including problems with problem solving, organising, planning and abstraction (frontal lobe functions); short- and long-term memory loss; and 14 verbal fluency, learning, and visio-spacial perceptions. Impaired co-ordination and balance have also been found (Schneider, *et al*., 2007).

Alcohol influences several neurotransmitter systems, including opiate receptors, gamma-aminobutyric acid (GABA), glutamate, serotonin and dopamine. The increase in opiate levels may explain the euphoric effects of alcohol, while its effects on GABA give it anxiolytic and sedative properties, and induce muscle relaxation and the feeling of intoxication. Alcohol inhibits glutamate receptors and long-term ingestion results in the synthesis of glutamate receptors leading to central nervous system excitability when alcohol is withdrawn (Schukit, 2009). The effects of dopamine in the ventral tegmental area may contribute to the rewarding effect of drinking and the craving as well as behavioural dis-inhibition during drinking (Rodseth, 2012).

2.10.10. Co-morbidity

Psychiatric co-morbidity is common in individuals with a history of alcohol abuse and dependence. Schizophrenia, bi-polar disorder, depression, attention deficit disorder, anxiety disorder and eating disorders have all been associated with the abuse of alcohol, though it is not always clear which condition preceded the other (Schneider, *et al*., 2007).

2.10.11. Depression

According to the WHO Global Status Report on Alcohol (WHO, 2004), there is evidence to assume that alcohol has a causal role in depression. Not only do alcohol dependence and major depression co-occur disproportionately, but also higher volumes of alcohol consumption are associated with more symptoms of depression (Graham, Frost-Pineda & Gold, 2007). While it has often been postulated that people suffering from depression "self-medicate" with alcohol (no doubt in some cases this is true), the question of which precedes the other is not yet fully resolved and/or whether there may be a third variable such as neurobiological mechanisms or genetic predisposition, which causes both to occur (Arch, *et al*., 2006). Nonetheless, evidence of a causal link from alcohol to depression is growing. Reversibility (remission during abstinence) is a key indicator for causal effect of alcohol dependence on depressive disorder and there is good evidence that abstinence substantially removes depressive disorders within a short time frame (Schneider, *et al*., 2007).

2.10.12. Alcohol dependence

The ICD-10 defines alcohol dependence syndrome as being a cluster of physiological, behavioural and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value. A central descriptive characteristic is the desire (often strong, sometimes overpowering) or sense of compulsion to take alcohol. In the WHO Global Status Report on Alcohol (2004), of 35 countries reporting levels of alcohol dependence amongst the adult population, South Africa had the highest reported figure, that is, 27.8% of males and 9.9% of females. This should, however, be interpreted with great caution, for example, as instruments and timeframes used were not standardized.

Alcohol is consistently the substance of abuse in people receiving help for substance related problems in South Africa. In the first half of 2005, between 47% (Cape Town) and 74% (Durban) of patients receiving treatment had alcohol as a primary or secondary drug of abuse (Parry, 2005). Although the number of people seeking treatment for alcohol abuse seems to be

decreasing and the number seeking treatment for the abuse of other drugs seems to be increasing, alcohol abuse remains the main reason why people seek treatment. The number of patients older than 20 seeking treatment for alcohol problems is substantially higher than that for younger patients.

2.10.13. Non-natural mortality and morbidity

Unintentional and intentional injuries are responsible for up to 10% of the global burden of disease. Internationally, alcohol use accounts for 13% of DALYs lost due to 15 unintentional injuries and 15% due to intentional injuries (Rehm, *et al.*, 2003). The amount of alcohol consumed is a major determinant of both risk and severity of injury. Alcohol plays a major role in traffic and other accidents, as well as homicides, interpersonal injury and suicide. High rates of alcohol have been found in both the "perpetrator" and the "victim". The largest number of non-natural deaths is South Africa is due to violence (48%) followed by transport fatalities (30%). Both violence and transport deaths are closely linked with alcohol (Plüddemann, *et al.*, 2004; Matzopoulos, 2005; Schneider, *et al.*, 2007).

2.10.14. Alcohol-related mortality

Data from the Non-Natural Mortality Surveillance System (NNMSS) in 2002 indicated that 46% of non-natural deaths in South Africa involved persons with blood alcohol concentrations (BACs) greater than or equal to 0.05g/100 ml (Matzopoulos, Seedat & Cassim, 2003). NNMSS data for 2003 indicated that for all causes of death, 49% had positive BACs and the mean BAC overall was 0.18g/100ml (Harris, Sukhai & Matzopoulos, 2004). Levels of BAC positivity were high for homicides (51% positive, with a mean BAC of 0.17g/100ml), suicides (35% positive, with a mean BAC of 0.15g/100ml) and transport related deaths (53.3%) (Matzopoulos, 2005).

The majority of transport-related deaths in South Africa are of pedestrians (38.8%), followed by unspecified (21%), driver of a motor vehicle (17.7%) and passenger (12.2%) of deaths. While in all categories of transport-related death, high alcohol blood levels was prevalent, this was highest amongst pedestrians (61%). This means that, by far, the largest number of transport-related

deaths in South Africa is of intoxicated pedestrians. Despite this, campaigns almost always focus on drinking and driving and not on drinking and walking!

2.10.15. Alcohol-related trauma

In 2001, 39% of trauma patients in Cape Town, Durban and Port Elizabeth had breath alcohol concentrations (BrACs) greater than or equal to 0.05g/100 ml (Plüddemann, *et al.*, 2004). Levels of alcohol positivity were particularly high for persons injured as a result of violence (73% for Port Elizabeth, 61% for Cape Town and 43% for Durban). In data gathered from a wide variety of facilities in the Cape Metropol, Peden reported that 70% of domestic violence cases were alcohol-related (Peden, 1995). From research conducted by the Department of Transport, the national daily average of persons driving under the influence of alcohol was found to have increased from 1.8% in 2002 to 2.1% in 2003 (Arrive Alive, 2005).

The differences between perpetrator and victim are not always clear. For example, victims may include people involved in fights who happened to be the ones injured or killed, or the drunk driver of a motor vehicle injured or killed in an accident.

2.11. SOCIAL AND PSYCHOLOGICAL IMPACTS

Alcohol consumption can have both social and psychological impacts even though these are more difficult to measure than the physical health impacts. However, one can look at substantive impacts on crime, patterns of interpersonal violence, and family and work problems.

2.11.1. Alcohol and crime

A national study of prisoners and parolees in 1996 found that just under half had taken alcohol or other drugs just prior to the crime for which they were incarcerated (Rocha-Silva & Stahmer, 1996). Drinking was especially linked to rape and housebreaking offences. Subsequent research in Cape Town, Durban and Johannesburg in three phases between 1999 and 2000 (Parry, *et al.*,

2004) found that, overall, 15% of the arrestees were under the influence of alcohol at the time the alleged offence took place. Regarding violent offences, arrestees indicated that they were under the influence of alcohol for 25% of the weapons related offences, 22% of rapes, 17% of murders, 14% of assault cases and 10% of robberies. Levels of alcohol-related crimes were particularly high for family violence offences at 49% (Seedat, van Niekerk, Jewes, Suffla & Ratele, 2009).

Arrestees also indicated that they were often under the influence of alcohol in cases involving property offences. For example, 22% of cases involved housebreaking and 12% of cases involved the theft of a motor vehicle. When asked why they had consumed alcohol or other drugs before committing crimes, many arrestees indicated that they consumed these substances in order to give them courage to commit the crimes (Parry, *et al*., 2004).

2.11.2. Interpersonal violence

Of the approximately 2.1 million cases of crime reported in South Africa between April 2007 and March 2008, "contact" crimes (murder, attempted murder, and rape, assault with intent to inflict grievous bodily harm, common assault, indecent assault, aggravated robbery and other robbery) accounted for 33% of all crimes. While the incidence of all contact crime showed a decrease for 2007/2008 as compared to the incidence for 2006/2007, the incidence of violent crime remains unacceptably high. For example, the murder rate per 100 000 for South Africa is 39 000, ranking 7th highest out of 11 countries (Seedat, *et al*., 2009).

Numerous studies have found an association between alcohol consumption and aggressive behaviour though not everyone who consumes alcohol gets aggressive. People with anti-social personality disorders appear to be particularly susceptible to alcohol-related aggression. People who have previously been violent under the influence of alcohol are the most likely to become aggressive when drinking again. Internationally, alcohol has been associated with numerous acts of interpersonal violence which include physical and sexual abuse, emotional and psychological abuse and neglect (Seedat, *et al*., 2009; Setlalentoa, *et al*., 2010).

Various categories of criminal behaviour have been identified as having links to drinking and driving, homicide, domestic violence, other assaults, sexual violence and child abuse. A strong link between alcohol use, crime and violence has been established by meta-analysis, with between a quarter and half of homicides or purposeful injury having shown to be attributed directly to alcohol use (English, Holman, Milne, Hulse & Winter, 1995; Single, Robson, Xie & Rehm, 1998). McClelland and Teplin, (2001) directly observed 2365 police-citizen encounters in the USA. Overall, 34% of these encounters were judged to be alcohol-involved, with the following percentages reported: violent crime and sexual assault (43%), spousal assault (43%), robbery (39%), public order/vandalism (46%) and other non-violent encounters (23%).

2.11.3. Family and work problems

Drinking can impair one's functioning as a parent, as a spouse and as a contributor to the running of a household (Mulaudzi, 2003). Drinking requires time (often spent with drinking colleagues) and this competes with time needed to carry on family life (e.g. time spent with children, doing household chores etc.).

Drinking money often takes precedence over other household needs, often leaving the family unable to afford even basic goods and services. Drinking leads to a spiral of poverty in which the drinking behaviour inhibits income capacity (through absenteeism, lack of motivation, poor quality of work, loosing employment) while any income earned is then spent on drink – at times to drown sorrows related to not having work or only having a poorly paid job. A study in Delhi, India, compared families where the husband drank at least three times a week to those where the husband drank only once a month. In the first group 24% of household income was spent on alcohol compared with 2% in the other families. The family with the drinker had significantly more debts (60% vs. 42%) and these debts were twice as large (Mulaudzi, 2003; Mothiba & Malema, 2009).

While continuing patterns of drinking threaten family subsistence, events that take place when a family member is intoxicated can also have lasting consequences – mainly through injuries and

family violence. The psychological toll on the family is often great. For example, in interviews with family members of heavy drinkers in Mexico, 73% reported feelings of anxiety, fear and depression, 62% reported physical or verbal aggression, and 31% reported family disintegration. For many mothers, the inability of the fathers to bring in adequate incomes to feed and clothe their children owing to their drinking habits, leads to depression in the mothers (Mulaudzi, 2003; Mothiba & Malema, 2009).

Violence against women and children often has severe psychological consequences for the victims (WHO, 2001). Alcohol can impair work performance through decreased efficiency and it can lead to poor workplace safety. For example, intoxication can result in errors of judgement, accident proneness and putting the lives of others at risk. Alcohol misuse also results in greater absenteeism from work and increases the risk of dismissal from work. In Costa Rica it was found that 30% of absenteeism and workplace accidents were caused by alcohol dependence. In India 15-20% of absenteeism and 40% of accidents were due to alcohol. Among Grades 8 and 11 learners in Cape Town, a significant association was found between past month use of alcohol and the number of days absent from school and repeating a grade. The odds of repeating a grade were 60% higher for learners who consumed alcohol. Whether this relationship was causal, or occurred through another factor was not established (Peltzer, Cherian & Cherian, 1999b).

2.12. SPECIAL AREAS OF CONCERN IN SOUTH AFRICA

Two areas regarding alcohol in South Africa need special mention. These are the Foetal Alcohol Syndrome (FAS) and HIV/AIDS.

2.12.1. Foetal Alcohol Syndrome (FAS)

Heavy alcohol intake during pregnancy, usually in a binge drinking pattern, occurs in over 20% of women in the Western Cape (Croxford & Viljoen, 1999). Drinking during pregnancy remains

a problem despite considerable media attention efforts by the national government to limit alcohol harm and isolated initiatives to increase universal and other preventive activities in these provinces (Chersich, Urban, Olivier, Davies, Chetty & Viljoen, 2012). Drinking alcohol during pregnancy may lead to damage to the foetus. This could be in the form of Foetal Alcohol Effects or full-blown Foetal Alcohol Syndrome (FAS). FAS is characterized primarily by damage to the brain and the central nervous system, which results in hyperactivity, attention problems, learning disabilities (e.g. problems of memory, abstract reasoning), lack of judgement and fits. Other organs such as the heart and kidneys, as well as growth may be affected. There is no cure for FAS, and most FAS children are unable to cope with normal schooling (May, Brooke, Gossage, Croxford, Adnams, Jones, Robinson & Viljoen, 2000). Moreover, many FAS children are part of "alcoholic families" who are unable to give them the special care and attention they need. The result is that many FAS children drop out of school early, are not easily employable and are susceptible to gangs, crime and peer-pressure (Croxford & Viljoen, 1999; Viljoen, Craig, Hymbaugh, Boyle & Blount, 2003).

South Africa has the highest reported rate of FAS in the world. (It must be noted though that poorer countries have never conducted epidemiological research into FAS and thus rates in these countries are not known). Other studies have also found that FAS is higher with higher levels of FAS in the Western and Northern Cape than anywhere in the world (Olivier, Urban, Chersich, Temmerman & Olivier, 2013). In poorer areas of the Western Cape the prevalence of FAS among Grade 1 learners was found to be 46 per 1000 in 1997 and this increased to 75 per 1000 in 1999. In the Northern Cape rates of 103 and 75 per thousand were found in different areas. Prevalence in three poor areas in Gauteng found rates of 12, 22 and 37 per 1000. While the Gauteng rates were lower than those of areas in the Cape, they are still far higher than even the most at risk communities in developed countries, such as the urban poor or native settlement areas in the USA. In studies in the USA and France, rates of 0,5 and 3,0 per 1000 were found. Mothers who drink alcohol in a binge fashion while pregnant and exceed 5 drinks per week per occasion, that is, more than 90mls of absolute alcohol, are especially at risk for FAS. Thus, one heavy bout of drinking may be enough to cause FAS (May, 1995).

2.12.2. Risky sexual behaviour

The misuse of alcohol is increasingly being recognised as a key determinant of risky sexual behaviour, and, consequently, an indirect contributor to HIV transmission in sub-Saharan countries. According to Morojele, *et al*. (2004), numerous cross-sectional investigations conducted among adults in this region have shown consistently that alcohol use is associated with HIV infection as well as with risky sexual behaviours, such as having multiple sexual partners (Mnyika, Klepp, Kvale & Ole-Kingori, 1996; Mbulaiteye, Ruberantwari, Nakiyingi, Carpenter, Kamali & Whitworth, 2000; Campbell, Williams & Gilgen, 2002; Hargreaves, James, Morrison, Chege, Rutenberg, Kahinde, Hayes & Buve, 2002; Fritz, Woelk, Bassett, McFarland, Tobaiwa & Stall, 2002; Clift & Barrett, 2003, Mnyika, Klepp, Kvale & Ole- Kingori, 1997; Trigg, Peterson & Meekers, 1997).

Three different but related explanations are proposed to account for the relationship between alcohol use and risky sexual behaviour. First is the argument that alcohol consumption may represent other behavioural, lifestyle, contextual and/or personality factors which are associated with engagement in high-risk sexual behaviour (Hargreaves, *et al*., 2002). Secondly, ethanol acts on the central nervous system, reduces inhibitions, and, consequently, increases people's likelihood of engaging in risky sexual and other behaviours. Thirdly, people's alcohol expectancies, that is, their expectations about how alcohol will influence their behaviour, can also influence their actual behaviour (Brown, Christiansen & Goldman, 1987).

In both qualitative and quantitative studies conducted by Morojele, *et al*. (2004) in a black township in South Africa among adults between the ages of 22 and 45 it was found that there were strong relationships between various measures of alcohol use and risky sexual behaviour. In this quantitative study, two main types of effects that alcohol consumption may have on sexual behaviour were identified, that is, drinking seems to increase the appeal of sexual episodes and it reduces people's control with respect to sexual encounters. The variables which were found to be associated with the reported increased sexual appeal owing to drinking were being young, not being married, being employed, drinking more, being a problem drinker, having more sexual partners and engaging in regretted sex (Mbulaiteye, *et al.*, 2000; Kalichman & Simbayi, 2004).

This profile seems to suggest that inexperienced, younger, heavier drinking adults are at greatest risk of having alcohol-related risky sexual encounters. Those who reported being less able to have control over their condom use after drinking were less likely to have used condoms in their lifetimes. It seems that those who were usually not inclined to use condoms might have become even less inclined to use them after drinking. However, other individuals who were most strongly committed to condom use became even more vigilant when drinking (Kalichman & Simbayi, 2004).

Men appear to be at greater risk of engagement in alcohol use-related risky sexual behaviour than women. Men are also more likely to report that they engage in sex under the influence of alcohol, that drinking increases their desire to have sex with a casual partner and that drinking worsens their ability to resist unwanted sexual advances (Kalichman & Simbayi, 2004).

2.13. SCREENING FOR RISKY DRINKING

Screening for risky drinking should be routine in primary health care clinic practice in order to prevent alcohol-related problems before they become disabling and more difficult to manage. Early identification of alcohol-related problems is important because these problems are prevalent, pose serious health risks to patients and their families, and are amenable to intervention. Brief intervention may help patients to change their behaviour. Recording the history of the patient's drinking behaviour in order to identify patterns of alcohol-related difficulties with physical and mental health, family life, legal authorities and employment, can be the most effective tool for screening (Burge & Schneider, 1999).

Research indicates that after personal reflection about the negative consequences of alcohol misuse, many drinkers reduce their drinking without formal treatment. Health care providers in primary health care clinic settings can help prevent the serious effects of alcohol-related problems by stimulating such reflection and moving patients toward healthier lifestyles (Burge & Schneider, 1999).

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

Most problem drinkers are employed, employable, or in families, indicating that the scope of the problem extends far beyond those who meet the formal diagnostic criteria. Therefore, in a primary health care clinic setting, one first identifies and then helps the patient understand and acknowledge the consequences of drinking, the presence of a problem, and the need for intervention.

Screening questionnaires

A variety of screening procedures that are intended to aid in the detection of people with harmful and hazardous alcohol consumption in clinical and primary health care clinic settings have been devised e.g. the 25-item MAST and CAGE test (WHO, 1996; Edwards, *et al.*, 1997; Cherpitel, 1997). These tests generally tend to pick up the more extreme rather than the easy cases. The MAST test, for instance, has among its items delirium tremens and hospital admission for drinking. However, the tests show remarkably good sensitivity and specificity for excessive drinking and alcoholism (Edwards, *et al.*, 1997). Thus, such instruments are of value for routine screening in a hospital setting. Questionnaires may be of value in a primary health care clinic. However, these tests, in general, have found more application as research tools than in the front line medical and social setting where paper and pencil tests provide no substitutes for vigilance, sympathetic questioning and the real skills needed for identifying drinking problems of all degrees, types and concealment (Edwards, *et al.*, 1997).

The Alcohol Use Disorder Identification Test (AUDIT) was developed by an international group of investigators at the request of the World Health Organization. Its aim is to identify problem

drinkers in primary health care clinic settings. It was designed for use by health care workers in developed and developing countries. AUDIT was designed specifically to detect problem drinkers rather than alcoholics by placing emphasis on heavy drinking and frequency of intoxication rather than signs of dependency (Haggerty, 1994). AUDIT is useful in screening for both currently harmful and potential hazardous drinking and has demonstrated high sensitivity and specificity, and it can identify mild dependence. Potentially, this is the screening questionnaire that should be of value to clinicians and researchers in the primary health care clinic in the future (Edwards, *et al*., 1997; Cherpitel, 1997). The questions refer to lifetime alcohol experiences, as well as those in the past year, thus distinguishing between current and previous problems (Haggerty, 1994).

2.14. TREATMENT

The fact that the annual increase in new alcoholics is greater than the number who are successfully treated, and that it is from the population of non-problem drinkers that new problem drinkers emerge, requires society to make an effort to prevent alcohol abuse among people who are not experiencing any alcohol-related difficulties.

2.14.1. Primary prevention

Efforts are intended for individuals who drink alcoholic beverages but do not have alcohol-related problems, and those people who do not yet drink alcohol. The goal of prevention is to reduce the possibility of drinking problems occurring. It also involves identifying groups at increased risk including professionals, executives, young people, and women, especially those of childbearing age, and the elderly, as well as those with depression, other drug use or a family history positive for alcoholism (Edwards, *et al*., 1997).

2.14.2. Secondary prevention

Intervention focuses on alcohol users whose drinking is causing problems, and attempts to keep these problems from becoming severe.

2.14.3. Tertiary prevention

The treatment deals with drinkers and alcoholics who are experiencing severe problems as a result of their drinking. The goal of treatment is to help these individuals stop drinking and return to a productive life (Edwards, *et al*., 1997).

2.15. INTERVENTION

Alcohol use is associated with tremendous costs to the drinker, those around him or her, and society as a whole. These costs result from the increased health risks (both physical and mental) associated with alcohol consumption, as well as from the social harm caused by alcohol. To reduce alcohol's impact on the burden of disease, as well as on other social, legal, and monetary costs, therefore, it is imperative to develop effective interventions that can prevent or delay initiation of drinking among those who do not drink, particularly adolescents, and limit consumption to low-risk drinking levels among those who do consume alcohol.

The main goal is to make problem drinkers aware of the connection between their drinking and their physical health, personal relationships, job performance and circumstances. Many problem drinkers attempt to deny these connections and they may not be desperate enough to seek help on their own. In the light of this resistance, intervention is tailored to the individual and his or her circumstances (Edwards, *et al*., 1997).

Sometimes, confrontational intervention treatment presents the problem drinker with clear evidence of his or her self-destructive behaviour. The confrontation might be produced by a spouse who threatens divorce, by an employer who threatens a loss of job or by a physician who points out the profound medical consequences of continued drinking. Such confrontations are

frequently successful in moving the problem drinker into action. In general, the earlier that intervention takes place in a drinking career, the more successful it is (Edwards, *et al*., 1997).

Current knowledge holds that the earlier the intervention in a potentially troublesome drinking career, the better the chances of reversing the trend and overcoming the problems. It is not the sole responsibility of teachers, employers or professional counsellors to carry out interventions, a remark by a friend or family members can help alert the person to the knowledge and concern that other people have about his or her drinking behaviour. Sometimes a single-session intervention might not have a successful impact; it might take several interventions before a person begins to take action. This is mainly because, when people are confronted with an aspect of their behaviour they do not wish to recognize, they often deny that it exists at all. This initial denial is often a reflection of an unconscious attempt to minimize a problem's significance and protect the ego against criticism. With sensitive, caring and supportive intervention the problem drinker will eventually feel comfortable enough to admit that he or she is having an alcohol-related problem (Fishman, 1992).

2.16. BRIEF INTERVENTION FOR ALCOHOL PROBLEMS

This section addresses the effectiveness of brief intervention and implementation in the health sector. Brief interventions are characterized by their low intensity and short duration and usually comprise one to three sessions of counselling and education. The goal is to provide early intervention. The assumption underlying screening and brief intervention in primary health care clinics is that, for identified risky drinkers, reducing overall alcohol consumption or adopting moderate drinking patterns will reduce the risk of medical, social, and psychological problems (WHO, 1996).

The effectiveness of brief intervention for risky drinkers

Brief interventions for reducing their levels of alcohol consumption and alcohol-related harm have been developed and implemented in many countries (Pennings, Leccese & Wolf, 2002).

These seek to change views of personal acceptability of excessive drinking and to encourage self-directed behaviour change. They include simple forms of structured advice and brief counselling (Whitlock, Polen, Green, Orleans & Klein, 2004). Easy access to these interventions is possible as they can be delivered by a wide range of generic practitioners (Grothues, Bishof, Reinhardt, Meyer, John & Rumpf, 2008).

An international evidence-based research has accumulated data for more than 20 years, with efficacy data originating mainly from English-speaking countries. Reductions in the volume of alcohol consumed are typically about 10-15% (Pennings, *et al*., 2002) and reductions in the proportions of hazardous drinkers are between 10-19% (Bien, Miller & Tonigan, 1993) following brief intervention. Reductions in alcohol problems of a similar magnitude and in health service utilization have also been identified (Wilk, Jensen & Havinghurst, 1997; Emmen, Schippers, Bleijenberg & Woller, 2004). Motivational Interviewing (MI), defined as "a facilitative, patient-centred counselling style for helping people explore and resolve ambivalence" (Fleming, *et al.*, 1997), has become increasingly prominent within this literature.

Opportunistic screening and brief intervention (SBI) has been shown to be effective and cost-effective in reducing the health and social problems that result from excessive drinking (Anderson, 1993; Wilk, *et al*., 1997). In addition to providing health gains for patients, SBI may reduce societal costs of excessive drinking and result in economic gains for health services (Moyer, Finney, Swearingen & Vergun, 2002; Fleming, Mundt, French, Manwell, Stauffacher & Barry, 2003). Brief interventions have been viewed as having the most promise for treatment of individuals whose alcohol problems are in the mild-to-moderate range of severity. Accordingly, brief interventions may have their greatest public health influence in primary and secondary prevention efforts (Heather, 1995; Heather, 2002; Freyer-Adam, Coder, Baumeister, Bischof, Riedel, Paastsch, Welder, Rumpf, John & Hapke, 2008). A number of clinical trials for brief interventions for alcohol problems have been conducted in the primary health care clinic setting, where individuals are treated for medical problems that may be caused or exacerbated by the excessive use of alcohol (Fleming, *et al*., 1997; Parish, 1997). There is substantial evidence supporting the efficacy of brief intervention in reducing heavy drinking.

Heather (1986) reported a study whose subjects were recruited from newspaper advertisements, that sought people who considered themselves to be heavy drinkers. The purpose of the study was to compare the effectiveness of a self-help manual designed to help people to cut down their drinking with a simple information booklet. The author found that the group who received the self-help manual reported a significantly greater reduction in the previous week's mean alcohol consumption of the six-month follow-up than those who had been given the booklet. However, this difference was not maintained at the one-year follow-up.

In another study which used the media to recruit subjects, Sanchez-Craig, Spivak and Davila (1991) explored whether additional interpersonal contact was more effective than giving health-related literature on its own. It evaluated the effects of personal counselling and counselling when combined with two types of reading materials on patterns of alcohol consumption. It was found that, after one year, all groups reported a significant reduction in the mean number between the groups.

No control groups were used in the studies reported by Heather (1986) or by Sanchez-Craig, *et al*., (1991). Consequently, the extent to which the interventions (as opposed to any confounding variable) influenced the outcome cannot be assessed. Anderson and Scott (1992) found, in their controlled study of the effectiveness of minimal intervention by general practitioners, that statistically significant improvements were demonstrated one year after patients had been given simple advice about their alcohol consumption by their general practitioners. The effectiveness of minimal intervention approaches for problem drinkers in general hospital wards has also been demonstrated (Chick, Lloyd & Crombie, 1985; Babor & Grant, 1992).

In a study conducted by Chick, *et al*., (1985) the intervention consisted of a one-hour counselling session supplemented with an information booklet. One year later, statistically significant reductions in alcohol consumption were reported by both the control and treatment groups. The treatment group reported significantly fewer alcohol-related problems than the controls, and the

results were supported by changes in the results of liver function tests. All patients who were recruited to the study were males under 65 years of age and were either in employment or had recently been employed.

By excluding women, unemployed men and those over 65 years, the study failed to address the effectiveness of such interventions for a relatively large proportion of the general hospital patient population. Both the screening procedure and interventions were carried out by a nurse who was a specialist practitioner with considerable experience in counselling problem drinkers. It may be that such effects would not have been found if the interventions had been delivered by general nurses who work in acute care hospital wards and are able to spend as much time (i.e. one hour) in discussing issues relating to alcohol consumption as was given to the participants of the study.

A large international study of brief interventions for alcohol problems was conducted by a team of researchers in ten countries. The study was co-ordinated by the World Health Organization (Babor & Grant, 1992). One thousand six hundred and fifty five subjects were recruited from a variety of settings which included general hospital wards, emergency departments, primary health care clinics (PHC), health screening agencies, educational institutions and the workplace. Following recruitment to the study, subjects were assigned to one of three experimental groups for treatment: (i) a control group who received no treatment; (ii) a group who were given five minutes of simple advice about drinking; and (iii) a group (brief counselling condition) who were given more extensive advice in a 20 minute counselling session and a 30 page problem-solving manual about controlled drinking. Reductions in reported levels of alcohol consumption were seen in all groups, with the exception of the 'simple advice' group in two of the ten countries, and in a control group in one country. It appears that brief intervention may have a place in the repertoire of treatment modalities for problem drinkers.

Watson (1996), in another study, assessed the effectiveness of brief interventions, administered by a general hospital nurse, in an acute care setting, to help a sample of at-risk problem drinkers to achieve a reduction in alcohol consumption. The study evaluated the effectiveness of giving:

(i) a booklet containing information about sensible drinking limits, how to calculate consumption in standard units and suggestions about how to reduce consumption; (ii) the information as described in the booklet, but in a one-to-one personal interaction; (iii) a combination of the information in the booklet and the advice; and (iv) no treatment.

It was found that after one year, there was no significant difference in the levels of any of the outcome measures in those four groups. The results of this study did not show conclusive effects of minimal intervention. The study found that all groups reported lower levels of alcohol consumption in follow-up sessions. This finding is not confined to this study as reductions in mean drinking levels of the control group, as well as of the treatment group, was a feature in many of the studies of minimal interventions for problem drinkers (Chick, *et al*., 1985; Babor & Grant, 1992; Anderson & Scott, 1992).

The fact that there were highly significant reductions reported at the one-year follow-up for the entire sample, including the control group, for the mean levels of consumption, number of reported alcohol problems and the levels of both liver enzymes, could be because the detailed inquiry into drinking behaviour of the screening procedure acted in itself as an intervention. Its effect was to raise awareness of potentially harmful levels of alcohol consumption. This suggests that simply asking patients about alcohol consumption may act as an intervention in its own right. It could be that talking in detail with patients about the amount they drink at a time when they are unwell and, therefore, perhaps more sensitive to issues which relate to their health, is sufficient to encourage them to consider the implications of their drinking on their health.

2.17. IMPLEMENTING INTERVENTIONS

Intervention can best be implemented in the health sector. Parry and Bennetts (1998) note that "the first step is to identify alcohol problems at the primary health care clinic level." Health workers need to ask patients about their drinking practices in a way that will elicit honest answers. Secondly, there is a need to institute brief interventions for heavy drinkers at the

primary health care clinic level. There is no referring here to 'alcoholics'. Research in this area has been undertaken by the WHO in various developing countries, including Zimbabwe. This research has stressed that the target should be on consumption of alcohol itself and the focus should be on responsible drinking rather than on abstinence.

Two strategies have been proposed, namely giving brief interventions in the form of five to ten minutes of giving advice and issuing leaflets. The advice should focus, for example, on encouraging people to drink more slowly, to drink smaller quantities each time and on how to avoid intoxication. Brief intervention usually takes longer and comprises a form of condensed cognitive-behavioural therapy that includes the use of a self-help manual as well as follows visits (Parry & Bennetts, 1998).

WHO (2002) notes that in primary health care clinics, hazardous and harmful drinkers present themselves for treatment twice as often as other patients and may constitute 20% of the patients on a practice list. However, alcohol problems are responsive to early and brief intervention in primary health care clinics. A number of randomized controlled trials have shown that, in comparison with controls, hazardous and harmful drinkers receiving five to ten minutes of brief structured advice plus a self-help booklet from primary health care clinic workers will reduce alcohol consumption by an average of 25%. Primary health care clinics are a particularly valuable point of contact for the delivery of brief interventions because of the large proportion of the population who access primary health care services each year. Overall, it has been estimated that around 20% of patients identified as hazardous or harmful drinkers who receive a brief intervention will reduce their alcohol consumption.

Alcohol policy

The White Paper for Transformation of the Health System in South Africa, 1997 and the National Drug Master Plan, 1999 in South Africa have prioritized prevention and management of alcohol abuse and the integration of substance abuse in primary health care. The Department of Health (2001) has included in the service description of clinics the prevention and management

of substance abuse. Standards for PHC include health-learning materials on alcohol in local languages and competence of health staff in identifying alcohol abuse and providing basic counselling for behaviour changes and referral to NGOs specialising in substance abuse.

The Department of Health (1996) has also produced a primary health care clinic Mental Health manual, which includes a section on substance abuse and alcoholism. In 2001, the Department of Health trained trainers from all provinces on the prevention and management of substance use in primary health care. The training included the basics of early identification with the CAGE or AUDIT and brief intervention of alcohol problems. Consequently, various training workshops have been conducted on the prevention and management of substance abuse for multidisciplinary Primary Health Care staff in the provinces of South Africa.

Brief intervention is generally restricted to four or fewer sessions, each session lasting from a few minutes to an hour. The intervention is designed to be conducted by health professionals who do not specialize in addiction treatment. It is most often used with patients who are not alcohol dependent, and its goal may be moderate drinking rather than abstinence (NIAAA, 1999). However, when used for alcohol-dependence the goal is abstinence. Brief intervention has been used to motivate alcohol-dependent patients to enter specialised treatment with the goal of abstinence. Research indicates that brief intervention for alcohol problems is more effective than no intervention and often as effective as more extensive intervention (WHO, 1996).

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

This section presents the research methodology used when conducting the study. The first part describes the randomized control trial and its functions. This is followed by the description of the target population, sample and sampling procedure, instrument and data collection methods. This is followed by a description of how the data was analysed and the ethics observed while conducting this study.

3.2. RESEARCH DESIGN

Research design is a plan or blueprint of how a researcher plans or intends to conduct a study (Babbie & Mouton, 2001). It includes the methods and techniques used to collect, analyse and interpret data (Leedy & Omrod, 2001; Weiten, 2011). There are two major approaches to research, namely qualitative and quantitative approaches.

Qualitative research relies on language and the interpretation of its meaning. Data collection methods are dependent on the participants and do not involve testing of the hypothesis. Quantitative research data, however, is collected in order to determine numbers based on hypothesis testing (Creswell, 2003; Weiten, 2011). This study evaluates the effectiveness of the screening and brief intervention approaches concerning risky alcohol drinkers. The quantitative approach is more relevant to this study than the qualitative approach.

In this study, the researcher used the quantitative approach, which is a method that produces numerical data (Black, 1999). According to Thompson and Panacek (2006), scientific research is more thorough and the findings are more reliable when experiments have been used. Another advantage of using experiments is that if one wants to study the impact of an intervention on

human behaviour, experiments yield reliable data that can be repeated with more or less the same results (Weiten, 2011).

3.2.1. Experimental design

Experimental design is a research design where the researcher selects a group of subjects, does something to them, and observes the effects of what was done (Babbie & Mouton, 2001; Leedy & Omrod, 2001; Weiten, 2011). In experimental research, there are three major pairs of components, namely the independent and dependent variable; pre-test and post-test; and the experimental and control groups.

An experiment is defined as the collection of comparative data under controlled conditions (Jadad, 1998; Weiten, 2011). According to Kirk (1982), two of the distinguishing characteristics of an experimental design are the presence of one or more control groups, and the random assignment of participants to the experimental and control groups. In experimental research, the researcher controls and manipulates the independent variable in some way, in order to observe the effects of that manipulation on the dependent variable (Leedy & Omrod, 2001; Weiten, 2011). In a way, this compromises the control group in the sense that they are not receiving the manipulation on the independent variable.

The main characteristic of experiments is that they involve identifying and isolating individual aspects of a situation, making changes and observing the effects in detail. They are ideal for testing a hypothesis, and the basic aim of an experiment is to test the impact of an intervention on the outcome (Creswell, 2003; Weiten, 2011).

There are two types of experimental design, namely true experimental design and quasi-experimental design (Bennet, 2003; Weiten, 2011). The true experimental design uses a matched control and experimental group, and their equivalence is achieved by allocating numbers randomly to either group. In quasi-experimental design, however, this is not the case; non-equivalent groups are used.

The major strength of using a true experiment or randomized control trial is that it is able to hold all other extraneous variables constant, and to vary only those factors of interest. This enables researchers to determine with confidence whether the effects observed are due to the factors that have been manipulated, though it is not always possible for a researcher to have control over participants. The strength of the experimental design is that participants can be randomly assigned to conditions to rule out other rival hypotheses, but the major weakness of a true experimental design is matching the control and experimental groups, which is not always easy (Bennet, 2003; Weiten, 2011). In this study, a randomized control trial was used and is discussed in the following section.

3.2.2. Randomized control trial

A randomized controlled trial is defined as a study in which people are allocated at random (by chance, like the flip of a coin alone) to receive one of several clinical interventions (Jadad, 1998). One of these interventions is the standard of comparison or control. The control may be a standard practice, a placebo ('sugar pill'), or no intervention at all. Randomized controlled trials seek to measure and compare the outcomes after the participants have received the interventions. Because the outcomes are measured, randomized controlled trials are quantitative studies (Jadad, 1998).

After recruiting a total group of subjects, the researcher may randomly assign those subjects to either the experimental or control group (Babbie & Mouton, 2001; Weiten, 2011). In this study, the randomized control trial was used as the study aimed at evaluating the effectiveness of an intervention method (BI) for risky drinkers. A randomized control trial allows a researcher to compare two groups before intervention and after intervention to determine whether the intervention done had any impact and also to show if it can be used as an intervention method.

In this study, after the researcher had conducted the screening (pre-test), that is the administration of an AUDIT questionnaire, participants were randomly assigned to two groups, the experimental group and the control group. The experimental group was exposed to brief intervention, while the

control group was not. The control group received no intervention and was provided with only an information leaflet on cutting back consumption. Between the pre-test and post-test of participants, the experimental group received brief intervention and then after a period of six months, a post-test re-administration of the AUDIT questionnaire was done. This was done to compare the change in drinking behaviour in both groups prior to intervention and post intervention for the experimental group at Time 1 and Time 2 and for the control group at Time 1 and Time 2.

Jadad (1998) argues that Randomized Control Trials are quantitative, comparative, controlled experiments. The RCT is one of the simplest and most powerful tools in clinical research (Stolberg, Norman & Trop, 2004). RCTs are considered the most reliable form of scientific evidence because they eliminate all forms of spurious causality (Jadad, 1998). RCTs are mainly used in clinical studies but are also employed in other sectors such as judicial, educational and social research (Stolberg, *et al.*, 2004). Clinical RCTs involve allocating treatments to subjects at random. This ensures that the different treatment groups are 'statistically equivalent'.

The randomization procedure gives the randomized controlled trial its strength. Random allocation means that all participants have the same chance of being assigned to each of the study groups. The allocation, therefore, is not determined by the investigators, the clinicians, or the study participants (Jadad, 1998). The purpose of random allocation of participants is to ensure that the characteristics of the participants are as likely to be as similar as possible across groups at the start of the comparison (also called the baseline). If randomization is done properly, it reduces the risk of a serious imbalance in known and unknown factors that could influence the clinical course of the participants. No other study design allows investigators to balance these factors.

In essence, the randomized controlled trial is a study in which people are allocated at random to receive one of several clinical interventions (Jadad, 1998). On most occasions, the term "intervention" refers to treatment, but it should be used in a much wider sense to include any clinical manoeuvre offered to study participants that may have an effect on their health status.

Such clinical manoeuvres include prevention strategies, screening programmes, diagnostic tests, interventional procedures, the settings in which health care is provided, and educational models (Jadad, 1998).

Randomized controlled trials are used to examine the effect of interventions on particular outcomes such as death or the recurrence of disease. Some consider randomized controlled trials to be the best of all research designs, or "the most powerful tool in modern clinical research", mainly because the act of randomizing patients to receive or not receive the intervention ensures that, on average, all other possible causes are equal between the two groups. Thus, any significant differences between groups in the outcome event can be attributed to the intervention and not to some other unidentified factor (Stolberg, *et al*., 2004).

However, randomized controlled trials are not an answer to all clinical questions. For example, the effect of a risk factor such as smoking cannot ethically be addressed with randomized controlled trials. Furthermore, in many situations randomized controlled trials are not feasible, necessary, appropriate or even sufficient to help solve important problems (Jadad, 1998; Stolberg, *et al*., 2004). Randomized controlled trials are not appropriate for cancer screening, a situation in which the outcome is rare and frequently occurs only after a long delay. Thus, although the test for appraising the ultimate value of a diagnostic test may be a large well-designed randomized controlled trial that has patient outcomes as the end point, the trial should presumably be performed after other smaller studies have examined the predictive value of the test against some accepted standard (Jadad, 1998; Stolberg *et al*., 2004).

3.2.3. Randomized Controlled Studies

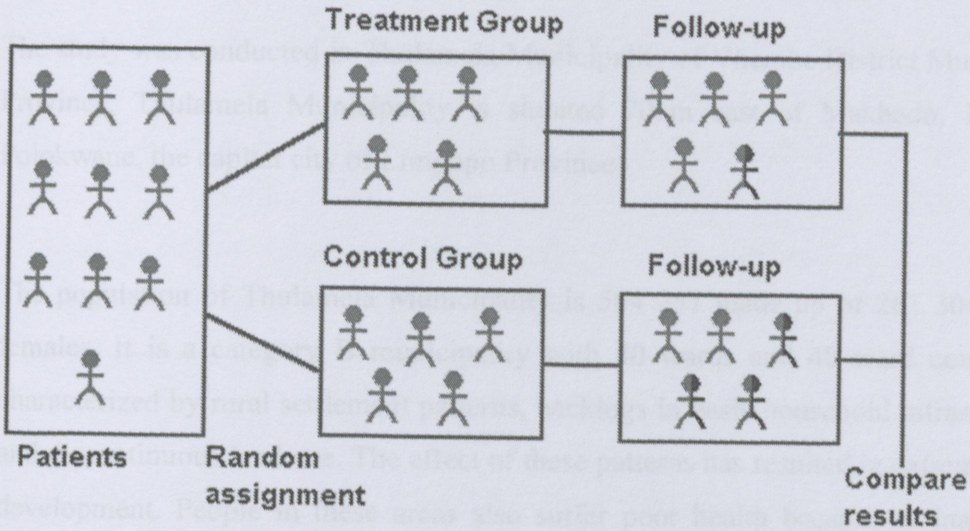

Figure 3.1. The process of a randomized control trial

A randomized controlled study is one in which:

1. There are two groups, namely one treatment group and one control group. The treatment group receives the treatment under investigation, and the control group receives either no treatment or some standard default treatment.
2. Patients are randomly assigned to all groups.

Assigning patients at random reduces the risk of bias and increases the probability that differences between the groups can be attributed to the treatment. Having a control group allows researchers to compare the treatment with alternative choices. For instance, the statement that a particular medication cures 40% of the cases tells very little unless researchers also know how many cases get better on their own (or with a different treatment).

Randomized controlled trials are the standard method of answering questions about the effectiveness of different therapies. If a researcher has a therapy question, he or she should first look for a randomized controlled trial, and then go on to look for other types of studies only if one is not found.

3.3. LOCATION OF THE STUDY

The study was conducted in Thulamela Municipality of Vhembe District Municipality in Limpopo Province. Thulamela Municipality is situated 70km east of Makhado, 180km north east of Polokwane, the capital city of Limpopo Province.

The population of Thulamela Municipality is 584 257 made up of 261 304 males and 322 953 females. It is a category B municipality with 40 wards and 40 ward councillors. The area is characterized by rural settlement patterns, backlogs in basic household infrastructure and services, and discontinuous land use. The effect of these patterns has resulted in extreme poverty and under-development. People in these areas also suffer poor health because of inadequate housing and health facilities. Thulamela Municipality is divided into two geographical areas, namely Thohoyandou and the surrounding rural settlement, and Malamulele (and the surrounding areas). The largest portion of the population is of school going age. Even though Thulamela has many people with different cultures and languages, the predominant cultures are those of the Tsonga/Shangaan and VhaVenda people which have a unique but unified history.

The study was conducted at a primary health care clinic, namely, Sibasa clinic in the Thulamela Municipality. The Vhembe District Municipality health services are offered in the following health establishments:

a) One regional hospital;
b) Six district hospitals;
c) One hundred and ten clinics;
d) Three get away clinics;
e) One health information centre;
f) Nineteen mobile clinics.

3.4. POPULATION

A population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying (Babbie & Mouton, 2001). The population of this study was comprised of people who arrived to consult health professionals at Sibasa clinic for any physical ailments. The people were interviewed by the researcher using the Alcohol Use Disorder Identification Test (AUDIT) to determine whether they were risky drinkers, in order to be included in the study. The risky drinkers were those who had a score of 8-19 on the AUDIT questionnaire. The population of this study (N=140) consisted of 105 males between the ages of 20 and 47 and 35 females between the ages of 21 and 40 at baseline.

At post-test, the population (N=132) comprised 98 males between the ages 20 and 47 and 34 females between the ages of 21 and 40. This study was part of the bigger Screening Brief Intervention project that was conducted in Limpopo Province. The study was approved by the University of Venda School of Health Sciences Research and Publication Committee and Senex. Permission to conduct the study was granted for the bigger Screening Brief Intervention project by the provincial Department of Health, and local health authorities. In this study the permission for the larger study was used. Ethical clearance was obtained for this study from the University of Venda Ethics Committee.

3.4.1. Sampling procedure

Sampling is a process used to select cases for inclusion in a research study. Shipman (1988:52) define sampling as "a systematic way of choosing a population small enough to study and large enough to be representative". The main aim of sampling is to save time, effort and to obtain consistent and unbiased estimates of the population status in terms of what is being researched.

There are two main types of sampling methods, each with different subtypes: probability and non-probability sampling (Babbie & Mouton, 2001). In probability sampling, each element of the population has the same known equal chance of being chosen at random and has the same

known equal probability of being selected. In non-probability sampling, however, the chance of selection for each element is unknown and for some elements the chance is zero (Bless & Higson-Smith, 2000; Strydom & Venter, 2002). A sample is taken to enable a researcher to learn more about the population from which that sample has been drawn because it is impossible to study the entire population.

This study used an experimental design which involved patients at Sibasa clinic being selected and randomly assigned to either the experimental group to receive the experimental alcohol intervention or to the control group to receive information leaflets and no intervention. The researcher administered the AUDIT questionnaire to screen participants. Following informed consent and completion of baseline assessment prior to intervention, the researcher drew a randomly computer-generated group assignment in a sealed envelope to determine under which experimental group each participant should fall. The two groups to which they were put were the SBI experimental group and the control group (receiving information leaflet on cutting back). Random assignment occurred following the baseline assessment.

Participants who met the criteria were asked to participate in the study. Criteria for inclusion in the study were that prospective participants had to be over 18 years old, that they had to be both males and females, and that after screening, should have scored between 8 and 19 on the AUDIT questionnaire. Those who scored 20 or more on the AUDIT were referred to the hospital for further management.

3.4.2. Sample size

A sample is defined as a small subgroup of a population or representative group of people selected from the population the researcher is interested in studying (Babbie & Mouton, 2001). The size of the sample depends on the type of study. In experimental designs, for example, only a few participants can be used. Strydom and Venter (2002) are of the opinion that 30 participants are enough to perform statistical procedures, although there are some authors who feel that a minimum of one hundred is required. Some writers argue that when one is using an experimental

design that involves two or more groups, there should be a minimum of 30 participants per group.

The power of a statistical test is the probability that the test will reject the null hypothesis when the alternative hypothesis is true; that is, the probability of not committing a Type II error. As the power analysis increases, the chance of a Type II error decreases. Power analysis can be used to calculate the minimum sample size required so that one can be reasonably likely to detect an effect of a given size. Probabilities of 0.05 (1 in 20); 0.01 (1 in 100) and 0.001(1 in 1000) increase the chances of rejecting the null hypothesis when the null hypothesis is false, decreasing the chances of a Type II error.

Priori power analysis is considered the ideal type of power analysis. Researchers specify the size of the effect to be detected; that is, the measure of the distance between H0 and H1), the α level and the desired power level (1-β) of the test. Faul, Erdfelder, Buchner & Lang (2009) have argued that priori power analyses are ideal in that low error probabilities α and β can be achieved for any specification of the effect size; however, the calculated sample sizes are usually much larger than what is considered manageable in behavioural research. They argue that other factors like financial constraints, time constraints and methodological reasons such as sample heterogeneity in the case of data aggregation across studies prohibit the use of ideal sample size. Assuming that a behavioural scientist has arrived at a maximum N that can be achieved given the institutional constraints of the research, the N will most likely be smaller than the ideal N as determined by priori power analysis. Thus the only way to arrive at a reasonable power level is to increase the chances of committing an error (Faul, *et al.*, 2009). In this study, priori statistical power calculation was not done.

Prajapati, Dunne and Armstrong (2010) recommended that if the priori power analysis was not done then the post hoc power analysis can be done. Post hoc analysis involves determining the level of statistical power achieved for a given sample size, effect size and alpha level. Therefore this type of power analyses is most useful at the end of a study. What is actually important here is that the clinically relevant effect size is specified and not the actual effect size found based on the results of the study.

3.4.3. Blinding

Blinding is a practice where study participants are prevented from knowing certain information that may somehow influence them, thereby affecting the results of the study. To ensure that the highest degree possible that the intervention is responsible for any noted differences between the two groups, people involved in the gathering or analysing data might also be blinded to knowing who is being given the treatment and who is not (Day & Altman, 2000). In this study, the participants were blinded in the sense that they did not know whether they were assigned to a control group or an experimental group.

3.5. RESEARCH INSTRUMENT

This study adopted the AUDIT (Alcohol Use Disorder Identification Test), which is a screening tool that was developed by WHO in 2001. The AUDIT which is a 10-item questionnaire provides a systematic screening (see appendices), of alcohol use (Babor & Grant, 1992; Babor, Higgins-Biddle, Saunders & Monteiro, 2001). The AUDIT is administered either as an oral interview or as a self-report questionnaire and is recommended for screening in a primary health care setting. The screening total score is considered a simple way to provide each patient with an appropriate intervention, based on the level of risk. Brief intervention strategies are recommended for non-dependent risky drinkers (Babor & Higgins-Biddle, 2001). The main advantage of using a questionnaire is that it is cheap and is also quick way to collect data from a larger group (Wilson & Sapford, 2006). The SBI methods were copied from the WHO collaborative study on brief interventions (WHO, 2001).

Alcohol use in this study was assessed using the AUDIT. The AUDIT is a measure of the prevalence of alcohol use. The AUDIT's 10 items cover the three conceptual domains of consumption, dependence symptoms, and alcohol-related consequences that were intended to parallel the World Health Organization concepts of hazardous drinking, alcohol dependence, and alcohol-related harm. Because AUDIT is reported to be less sensitive at identifying risky drinking in females (Freeborn, Polen, Hollis & Senft, 2000), the cut-off points of binge drinking

for females (Abiodun, 1996) were reduced by one unit as compared with those of males (Chinyadza, *et al*., 1993). Furthermore, an assessment of alcohol use using a cut-off score of 8 or more was made for hazardous or harmful drinking. Hazardous drinking is defined as a quantity or pattern of alcohol consumption that places patients at risk for adverse health events, while harmful drinking is defined as alcohol consumption that results in adverse events (e.g., physical or psychological harm).

3.6. VALIDITY

Validity refers to the extent to which an instrument measures what it is intended to measure (Bennet, 2003). There are two types of validity in experimental research, internal and external validity. There are different factors that are relevant to both internal and external validity.

Maximising validity and minimizing bias

The question here is: To what extent can the intervention, rather than other influences, be considered to account for differing outcomes between the treatment and control groups? If not controlled in experimental design, these factors could produce effects that will interfere with the effect of the experimental stimulus. However, in randomized control trials, by employing a control group and random assignment, the RCT design minimizes bias and threats to internal validity by equalising the conditions on all "other influences" except for the intervention. Internal validity deals with the degree to which the findings of the research can be generalized to the whole population represented by the participants.

The following threats are common to internal validity that the random assignment addresses:

- **History.** External events that occur during the course of a study that could explain why people changed. An example is a life event such as a death in the family or being laid off from work. Negative life events, such as these, may offer an alternative explanation for study outcomes.

- **Maturation.** Psychological and biological processes that occur within individuals over the course of a study that provide an alternate explanation of why they changed.
- **Selection.** Another threat to validity may occur if the experimental and control groups differ at baseline.
- **Regression to the mean.** The tendency for extreme scorers to regress to the mean on subsequent measurements.
- **Attrition.** The rate of loss of participants from the study that differs between the intervention and control groups.

Minimising threats to external validity

The question here is: To what extent can the results be extended to people, settings, and interventionists different from those used in this particular study?

These are common threats to external validity that an RCT can address. They are:

- **Sample characteristics.** This refers to the extent to which we can generalize from the study sample to the population as a whole (or the population of interest).
- **Hawthorne effect.** People tend to react differently when they know they are being observed.

In this study, the observed factors that posed a threat to the validity were history, experimental mortality and the Hawthorne effect.

- History posed a threat because there were many events that could have happened between Time 1 and Time 2. In order to minimize that threat, the distance between Time 1 and Time 2 was six months.
- Experimental mortality was minimized by using participants from the same local area.
- The Hawthorne effect was difficult to control, but participants were informed about how it was important for them not to please the researcher, and to be honest in their responses.

- Pre-testing could have sensitized participants so that their response to treatment would be different.

In this comparison, outcomes for people randomly assigned to receive the new treatment are compared with those of people assigned to receive no treatment at all. The question is whether the new treatment produces any benefit at all, over and above the change due to the passage of time or the effects of participating in a study. A challenge with this control condition is that people receiving no treatment may find their own treatment outside the bounds of the study.

3.7. RELIABILITY

Reliability is the extent to which the instrument gives the same results after re-administration; this is re test reliability. The AUDIT is currently the only instrument specifically designed to identify hazardous and harmful drinking and is valid for detecting heavy drinking also in a general population sample (Aalto, Alho, Halme & Seppä, 2009). Cronbach alpha for the AUDIT was .78 for this sample. The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization as an effective screening instrument for alcohol use problems among patients seeking primary care for other medical problems in international settings, including African countries, namely Kenya and Zimbabwe (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2005; Babor, *et al.*, 2001). It has also been widely used as a standard tool in South Africa (Peltzer, 2006; Peltzer, Davids & Njuho, 2008).

3.8. DATA COLLECTION

The 10-item Alcohol Use Disorder Identification Test (AUDIT) (Babor, *et al.*, 2001) assesses alcohol consumption level (3 items), symptoms of alcohol dependence (3 items), and problems associated with alcohol use (4 items). In South Africa, a standard drink is 12g of alcohol. Freeborn, *et al.* (2000), reported that AUDIT is less sensitive at identifying risk drinking in women, that is, five or more units of alcohol per occasion. Therefore, Freeborn, *et al.*, (2000)

recommend that the cut-off points of binge drinking for women be four units of alcohol per occasion and five units for men. Responses to items on the AUDIT are rated on a four-point Likert scale ranging from 0 to 4 for a maximum score of 40 points. Higher AUDIT scores indicate more severe levels of risk with scores of 8 indicating a tendency to problematic drinking.

In this study, the AUDIT was administered at the baseline to determine those who would be included in the study. Patients who tested positive, that is, those with a cut-off score of 8-19 on the AUDIT questionnaire were eligible to participate in the study. After randomization, participants were grouped into an experimental group and the control group. The experimental group received intervention according to their category of alcohol consumption and the control group received only a leaflet on cutting back consumption. After six months, a follow-up was done, and the AUDIT was re-administered to collect post-test data. The AUDIT was administered in Tshivenda, which is the language that is spoken by nearly all the patients at the clinic.

Data were analysed by means of statistics. Statistics is defined as the study of methods for describing and interpreting quantitative information, including techniques for organising and summarizing data, and techniques for making generalizations and inferences. Numerical data can make a valuable contribution to evaluation research. The use of statistics in evaluation serves three primary purposes, namely:

- It is used to summarize a large amount of information through measures of central tendency or dispersion.
- It provides for frequency distribution to exhibit clusters and separation of responses.
- It provides a level of confidence that the data truly are representative of the intervention.

The collected data were captured and analysed using the Statistical Package for Social Sciences (SPSS). SPSS is a set of computer programmes that can be used to do different types of

statistical analyses. The advantage of using a statistical programme is that is enables one to calculate statistics quickly and accurately. SPSS can be divided into two categories, namely, data management and data analysis procedure.

The AUDIT score served as the dependent variable and the data from the AUDIT were analysed by means of a 2 x 2 repeated measures analysis of variance (ANOVA), with Time (pre-post intervention) being the within factor and Group (experimental-control) being the between factor. Missing data owing to non-response were deleted on an analysis-by-analysis basis. The researcher used an intent-to-treat analysis by including all participants who completed baseline assessments and who were randomized to intervention conditions. Individual cell sizes vary owing to missing values. Statistical significance was defined using the conventional value of $p<.05$.

Retention and attrition of participants

A total of 140 patients (35 women and 105 men, of mean age 30.7 years, SD=6.5 years, ranging from 20 to 47 years) enrolled in the study, completed baseline assessments, and were randomized to two conditions. All participants in the experimental condition (N=70), could be followed up (N=70), while participants in the control condition (N=70) 58 completed the follow-up interview (attrition rate of 17.1%). The overall attrition rate was 8.6%.

3.9. THE INTERVENTION

After the screening and assignment of participants to the control group and experimental group, those assigned to the control group were provided with the self-help leaflets on cutting back. They received no counselling. For ethical reasons only the leaflet that deals with cutting back consumption was given to this group.

The experimental group received the intervention. The brief intervention protocol indicates four components, namely: ask about alcohol use, assess, advise and assist. This includes direct feedback

about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (WHO, 2001).

According to the WHO protocol of brief intervention, after the administration of the AUDIT, the positive results are indicative of the next step which is provision of an appropriate intervention that meets the needs of each patient. Patients who score negatively in the AUDIT should be reminded about the benefits of low risk drinking or abstinence and told not to drink in certain circumstances such as when operating a vehicle or machinery, when pregnant or when considering pregnancy, if a contra-indicated medical condition is present or after using certain medications such as sedatives, analgesics and selected antihypertensive medication (WHO, 2001).

There are four levels of risks identified in the protocol and are as follows:

Zone I refers to low-risk drinking or abstinence.

Zone II consists of alcohol use in excess of low-risk guidelines and considered hazardous. It is generally indicated when the AUDIT score is between 8 and 15. A brief intervention using simple advice and patient education materials is the most appropriate course of action for these patients (WHO, 2001).

Zone III consists of alcohol use that is considered harmful in that the patient has started to experience problems because of alcohol use. The AUDIT score in this category is between 16 and 19. A combination of simple advice, brief counselling and continued monitoring with further diagnostic evaluation if the patient fails to respond or is suspected of possible alcohol dependence (WHO, 2001).

Zone IV is suggested by an AUDIT score in excess of 20. These patients are to be referred to a specialist for diagnostic evaluation and possible treatment for possible alcohol dependence. If the specialist services are not available, these patients can be managed in primary care. Patients can be managed first at the lowest level of intervention by their AUDIT score. If they do not respond to the initial intervention, they should be referred to the next level of care (WHO, 2001).

Brief intervention for hazardous and harmful drinking constitutes a variety of activities characterized by their low intensity and short duration. They range from 5 minutes of simple advice about how to reduce hazardous drinking to several sessions of brief counselling to address more complicated conditions. Intended to provide early intervention before or soon after the onset of alcohol-related problems, brief interventions consist of feedback of screening data designed to increase motivation to change drinking behaviour as well as simple advice, health education, skill building and practical suggestions. The elements of brief intervention protocol are as follows: present screening results, identify risks and discuss consequences, provide medical advice, solicit patient commitment, identify goals, such as reduce drinking or abstinence and give advice and encouragement (WHO, 2001).

In this study, participants were randomized and allocated to the experimental group, completed AUDIT at baseline and received brief intervention for alcohol reduction. The goals of brief intervention were to identify alcohol-related problems, to provide sensible drinking leaflets emphasizing the idea of sensible drinking limits and to make sure that patients realize that they are in the low-risk drinking category, and to provide feedback on their alcohol use,

The participants whose alcohol consumption was categorized as Zone II level of risk received a 10 minute session, which involved giving them feedback on their drinking behaviour as indicated by their AUDIT score, encouraging them that they had not yet developed problems related to alcohol, but that if they kept on drinking the way they were drinking, they were likely to develop alcohol-related problems. During the session, they were given simple advice about how they could reduce their hazardous drinking. Basically, clients were provided with information about sensible drinking and the effects of drinking.

The participants whose alcohol consumption was consider as Zone III level of risk received a 25 minute session of brief counselling. The session comprised the basic elements of brief intervention which involved providing participants with feedback on their drinking behaviour as indicated by their AUDIT score, identifying risks, discussing consequences of their alcohol consumption, providing medical advice, soliciting their commitment, identifying their goal of either reducing consumption or abstinence, and then giving them advice and encouragement. They were

educated the effects of alcohol on one's body and other areas that are problematic owing to alcohol use. They were also assessed at that point in terms of their readiness to change their behaviour. This was done using a scale of 1-10 to determine how ready they were to change the way they had been drinking. Depending on the readiness to change, the drinking behaviour from pre-contemplation and/or contemplation, the researcher then talked about how to cut back or stop drinking. The researcher helped the clients to identify situations that might tempt them to go back to this unhealthy drinking behaviour, and together with the researcher, the clients devised strategies to deal with those situations. Then the clients were also prepared in terms of how to deal with relapses and encouraged to return if there were any challenges. Clients were also informed that they would be contacted by the researcher after six months, to check on them and how they had been progressing since this intervention.

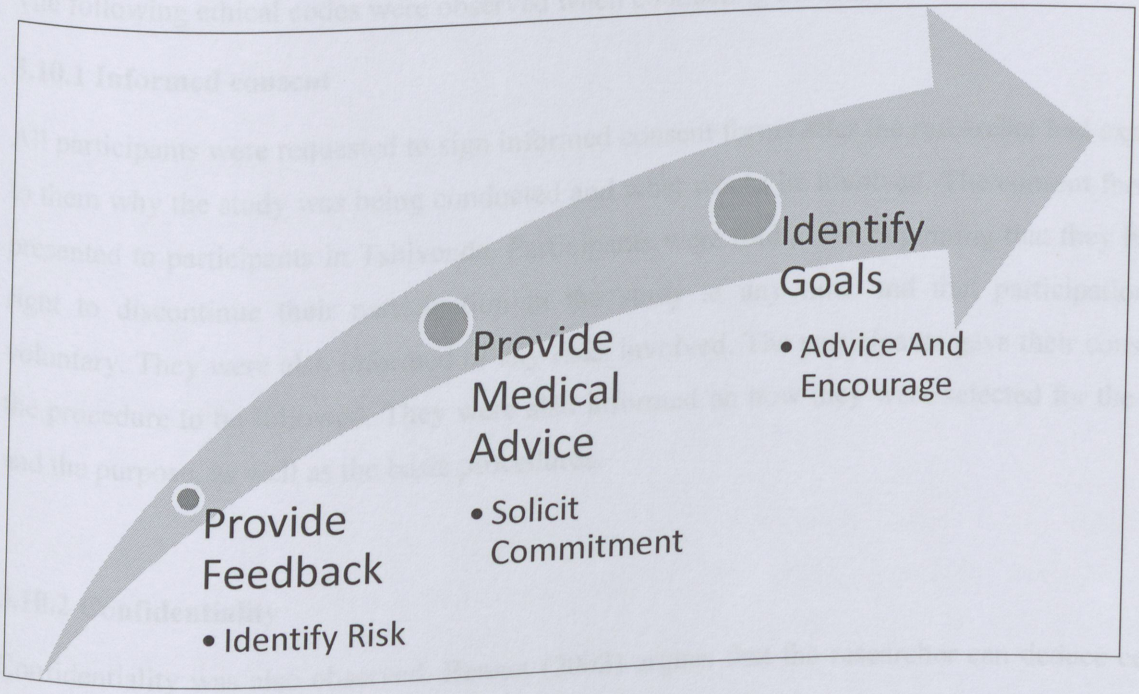

Figure 3.2. The process followed from administering AUDIT to intervention

Post intervention

The AUDIT was re-administered to 132 participants six months after the intervention. All participants (N=70) who were in the experimental group were re-assessed and only 62 from the

control group were re-assessed. Follow-up or re-assessment was done at the patients' homes and some were done telephonically. The assessment was done to determine whether the intervention had led to any behavioural change. It was assumed that after the intervention, if the control group showed no change, and the experimental group showed substantial change, then the change could be due to the intervention. The pre- and post-tests were used to evaluate the effectiveness of brief intervention. Data was collected from both groups at two different points in time, Time 1 (pre-test) and Time 2 (post-test). The disadvantage of the pre-test and post-test is that the pre-test often sensitizes participants to the post-test questions, when the same questions are used for both pre-test and post-test.

3.10. ETHICS

The following ethical codes were observed when conducting the study:

3.10.1 Informed consent

All participants were requested to sign informed consent forms after the researcher had explained to them why the study was being conducted and what would be involved. The consent form was presented to participants in Tshivenda. Participants were told at the beginning that they had the right to discontinue their participation in the study at any time and that participation was voluntary. They were also informed of any risks involved. The participants gave their consent to the procedure to be followed. They were also informed on how they were selected for the study and the purpose, as well as the basic procedures.

3.10.2 Confidentiality

Confidentiality was also observed. Bennet (2003) argues that the researcher can deduce certain personal information from the participants' responses. Therefore, the researcher is obliged not to divulge the information to any person. There are three main reasons for declaring confidentiality. It improves the quality and honesty of responses, especially on sensitive issues. It also encourages participation in the study and therefore increases the representivity of the sample, and lastly confidentiality is offered to protect a person's privacy (Weiten, 2011).

In this study, numbers were assigned to questionnaires which were linked to the names of the participants. Their names, with the corresponding number on the questionnaire, were written in a book and this information was kept in a safe place. The researcher was the only person who had access to that book. This was done so that when the participants had completed the post-test questionnaire, the researcher would be able to match the participants' numbers and names so that they could complete the same questionnaire. Study findings were honestly reported.

3.10.3 Compensation

Participants did not receive any remuneration for completing the baseline and for returning to the clinic for the follow-up assessment. Following the six-month follow-up, participants in the health education control group were offered the experimental alcohol reduction intervention.

All study procedures were approved by the University of Venda Research Ethics Committee and the Limpopo Provincial Department of Health in South Africa, as well as District and clinic authorities.

3.11. CONCLUSION

In this chapter, the researcher discussed the type of research design used, namely the experimental or randomized control trial used in this study. Although there are some disadvantages associated with randomized control trials, as with any other designs, this design is a powerful tool for conducting an intervention study. Different threats to validity were identified. Data were collected at pre-test and at post-test levels, and an intervention was conducted with the experimental group before the second assessment. The following chapter presents the findings of the study.

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CHAPTER 4: FINDINGS

4.1. INTRODUCTION

In this chapter the findings of this study are presented.

4.2. DATA ANALYSIS

AUDIT score results

Paired samples tests analyses found a significant reduction of the AUDIT score in both the intervention (t=15.47; P<0.001) and the control (t=11.28; P<0.001) group, although the experimental group had a higher reduction than the control group. Using ANOVA, there was no overall significant intervention effect between experimental and control groups at a six month follow-up (see Table 4.1).

Table 4.1: AUDIT score reduction outcomes among participants at baseline and 6 months follow-up following intervention (N=140)

	Experimental	Control	ANOVA	
	M (SD)	M (SD)	**F**	**P**
AUDIT score*			.405	0.526
Baseline	13.1 (3.8)	12.7 (3.2)		
Six month follow-up	7.0 (3.6)	8.1 (4.3)		

At baseline

Participants in both control group and experimental group were categorized into 3 zones, that is, zone II, III and IV.

Post intervention

Participants were re-assessed using the AUDIT questionnaire six months after the intervention. The results of the post-test are shown below.

The sample included 132 patients, 70 in the experimental group and 62 in the control group. The mean age of the experimental group was 30.8 (SD=6.5) and the control group 30.6 (SD=6.6), *t* =.23, p =.815. There were also no significant differences of other demographic variables: In the experimental group there were 54 men and 16 women, and in the control group 51 men and 19 women (χ^2=0.34, P=.558).

Participants were categorized according to the zones. The results indicate that there was a shift in drinking behaviour, with a new category of drinkers that was not there during pre-testing, namely zone1. Even though the control group did not receive any intervention, there was change in the drinking behaviour. Participants in the experimental group received intervention and the results indicate that there was also a change in their drinking behaviour.

Zone I- This is for people who scored 1-7 in the AUDIT. The current study only included the low risk drinkers. People who fell under this category at baseline were not included in the study. At the six month follow-up, those participants who were risky drinkers had moved from other zones to this zone. There were 17 males in the control group and 10 females from the control group, while 32 (24.4%) males and 11 (8.3%) females were in the experimental group. These participants were referred to as sensible drinkers. Normally these people drink to relax or socialize. Their intervention entailed giving them feedback on their drinking and encouraging them not to go

beyond this way of drinking, as well as providing them with information on the effect of drinking alcohol.

Zone II- At baseline, the number of participants who were found eligible to participate in this study were 97; there were 68 males (48.5%) and 29 females (20.7%) who scored 8-15 on the AUDIT. At six months post intervention, there were 22 (16.6%) males and five (3.8%) females in the control group, while 20 (15.2%) males and four (3.0%) females were in the experimental group. They are an at-risk group; that is, if they continue to drink the way they are, they might start to experience problems owing to their alcohol intake. Their intervention entailed giving them feedback on their drinking and providing them with information on the effect of drinking alcohol as well as talking to them about cutting back.

Zone III- At baseline, participants who were found eligible to participate in this study were 38, 19 males (13.5%) and 2 females (1.4%) in control group and 14 males and 3 females in the experimental group. The participants scored 16-19 on the AUDIT. At six months post intervention, there were four (3.0%) males and three (2.3%) females in the control group, while two (1.5%) males and no (0%) females were in the experimental group. Their intervention lasted for 30 minutes. They were given feedback on their drinking, information on the effect of drinking alcohol and information on how to reduce their drinking. After providing them with the information the researcher assessed their readiness to change their drinking behaviour. Depending on their readiness to change, the researcher then helped them to plan their behaviour change and then to action.

Zone IV- This group is referred to as the dependency drinkers. These people had already developed some psychological dependence on alcohol and were unable to control their drinking. At baseline, participants who were found eligible to participate in this study were one male (%) and no females (0%) who scored 8-15 on the AUDIT. At six months post intervention there were one (0.75%) male and no (0%) females in the control group while no (0%) males and one (0.75%)

female were in the experimental group. All the processes that were followed above apply with regard to these groups. The group was then referred to hospital for further management.

When classifying the consumption behaviour by AUDIT score, comparing before Brief Intervention and at six months follow-up, and among the experimental group at before Brief Intervention among the 70 risky drinkers, 42 were found to be hazardous drinkers, seven were harmful drinkers and one was a possible alcohol dependent drinker. After a six month interval among the experimental group consisting of 70 risky drinkers, 43 reduced their drinking to low risk drinking, 24 were hazardous drinkers, two were harmful drinkers and one remained a possible alcohol dependent drinker. It is evident that after the intervention at the six month interval, there was a decrease in drinking behaviour from high risk to low risk drinking.

As far as consumption behaviour in the control group is concerned, at baseline there were 70 risky drinkers, of these 48 were hazardous drinkers, 21 were harmful drinkers and one was a possible alcohol dependent drinker. After the intervention at the six month interval, 62 participants were assessed. At the six month follow-up among the 62 risky drinkers in the control group 27 had reduced their drinking to that of low risk drinkers, 27 were hazardous drinkers, seven were harmful drinkers and one remained a possible alcohol dependent. Noticeably, 27 risky drinkers had become low risk drinkers.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

In this chapter the findings of the study and literature control are presented.

5.2. Discussion

It emerged from this study that there was a significant reduction in the drinking patterns of both groups. Other randomized controlled trial studies had previously found that once the participants had been subjected to questions about their behaviour, they changed their behaviour whether exposed to intervention or not. However, it is not surprising that findings like this reveal behaviour changes even in the control group; this has been confirmed by previous studies. A study by Godin, Bélanger-Gravel, Amireault, Vohl, and Pérusse (2011) discovered that asking questions about cognition regarding physical activity positively influenced subsequent self-reported participation in the risky drinkers' behaviour over a three-month period. There could be different reasons why people change their behaviour post intervention, whether they are exposed to intervention or not. Some previous researchers have argued that the change in behaviour could be due to mere-measurement effect. According to French and Sutton (2010), this mere-measurement effect is also more likely to be detected when health-related behaviours are subjectively assessed.

A study conducted by Hermansson, Helander, Brandt, Huss and Roonberg (2010) found no significant differences between intervention groups and control groups. They concluded that alcohol screening may in itself cause reduction in the drinking. In agreement with a previous observation only very few tested positive for both baseline and follow-up alcohol screening. These results are also supported by this study. Of those enrolled in this study based on a positive alcohol screening results who also attended follow-up session after six months, only about 62 participants tested positive. Those allocated to the control group received no feedback about their

screening results; this may suggest that alcohol screening can in itself lead to a reduction in drinking.

Previous studies have reported that assessing only intention by means of a few items, changes subsequent performance of studied behaviours at follow-up (Fitzsimons & Williams, 2000; Sprott, Smith, Spangenberg & Freson, 2004; Levav & Fitzsimons, 2006), including physical activity (Williams, Block & Fitzsimons, 2006).

The precise mechanism behind the mere-measurement effect is still a matter of debate (French & Sutton, 2010). At this time, the dominant explanation of this effect is that asking behavioural intention questions heightens the accessibility of the person's attitude towards the behaviour, which in turns increases the likelihood that the behaviour will be adopted (Morwitz & Fitzsimons, 2004).

Other researchers have attributed this to the possibility of a cross-over effect that is present. Beich, Gannik, Saelan, and Thorsen (2007) argue that having been primed by the screening questionnaire, some control patients may have become more aware of their drinking and may be more open to discussing alcohol use issues with their doctors. In their study, they tried to minimize this effect by early randomization of all participants. This made it possible for them to avoid any feedback on the screening result being given to control-group patients. Controls merely took place in a rolling survey, and neither the patient nor the doctor knew about the screening result at any point.

Other researchers argue that changes in the measured behaviour of the control group should be viewed with caution because there might be different reasons that the control group behaviour changes even if there was no intervention. Many factors can be attributed to the change in the behaviour of the control group other than the assessment impact of clinical trials.

a) Blinding of study purpose (investigation of changes in alcohol consumption)

The previous researchers argue that a lack of blinding of subjects regarding the purpose of the studying can trigger social desirability bias, defined as the inclination of participants to give the researcher what they think the study is designed to find (Babor, McRee, Kasselbaum, Grimaldi, Ahmed & Bray, 2007; Kypri, 2007; Nye, Agostineli & Smith, 1997). As Daeppen, Gaume, Bady, Yersin, Calmes, Givel & Gmel (2007) maintain "there is reason to expect that these participants may have been aware of the nature of the study and adjusted the self-report in some manner".

b) Sample mix

The other reason for a positive change in a control group is attributed to sample mix. The previous researchers argue that enrolment may be affected by design elements, such as re-imbursement level or time requirements for completion of study procedures. In a non-treatment population, telegraphing the purpose of the study in consent form may predispose only clients who are already considering change to enrolling. They argue that it is common in the clinical research setting for patients to conceal substance abuse for fear that labelling might negatively influence a practitioner's willingness to provide medical care. Moss (2007) cites social control theory as a contributing factor to this phenomenon and social learning theory as the context for consequences of non-blinding.

The sample mix for brief alcohol intervention studies is also affected by the rate of the capture of eligible patients. Refusal to enrol in studies is more common in the primary care settings where patients are identified by screening, and alcohol use is rarely the presenting problem. In particular, small samples and randomization without blocking for problem intensity can result in a skewed distribution of acuity. If the sample is weighed toward the low end of the scale (high risk drinkers), there will naturally be fluctuations over time in consumption if the sample consists of primarily dependent drinkers who consume at outlier levels, and there will be a greater tendency to observe variations in measurement as a result of regression to the mean (Morton & Toggerson, 2005).

Moss, (2007) argued that assessment can raise an individual's awareness of risky drinking, initiate self-monitoring and lead to recognition of a discrepancy between current behaviour and a personal normative standard, communicate implicitly personal responsibility and impel a need for a change creating bias towards the null (Kypri, 2007). This type of connection is a final component of motivational intervention to reduce unhealthy alcohol use.

c) Procedures for control condition discharge

The argument here is that brief interventions in clinical studies require the control groups to receive a combination of normative feedback, and advice or referral. Standards of clinical care require that results be addressed by practitioners and in many countries institutional review boards require that control groups receive advice and/or referral resources. (Epstain, Drapin, Yusko, Cook, McCrady & Jensen, 2005; Clifford & Maisto, 2000).

d) Regression to mean

Alcohol intake varies over time and by season, except in the most dependent of drinkers (Dawson & Room, 2001). Regression to the mean at the time of repeated measurement may be a longer factor in self-reported declines in alcohol intake of control groups. Regression to the mean is to be expected, because outcomes conditions that vary over time are being measured. Measuring these outcomes with, admittedly imperfect instruments, an outlier value at enrolment is likely to be expected with a more moderate value at follow-up. Because of this variation, there is likely to be measurement bias because observations at Time 1 and at Time 2 may not reflect a true distribution (Morton & Toggerson, 2005; Finney, 2005).

e) Measurement/analysis issues

Variance in alcohol consumption end point is often larger with skewed distribution or outliers that may reduce statistical power and can complicate analyses. The treatment of outliers and transformation of data to account for skewedness must be considered for consumption endpoints. In order to limit inadvertent moderators of control group drinking, study participants must be blinded. Daeppen *et al*, (2007). Using a briefer version of a standardized instrument, that is,

replacing the long questionnaire AUDIT with also validated AUDT C which has three questions Kypri (2007). Nye, Agostineli and Smit (1999) suggest that normative feedback must be avoided, so as not to create heightened awareness that mimics intervention. Kypri (2007) proposes attention to a randomization procedure that will ensure a wide range of subjects and thus limit potential for bias; Morton & Toggerson (2005) stresses the importance of avoiding selection of the most severe cases in order to avoid pitfalls associated with regression to the mean.

In the current study, however, the experimental group had a higher reduction than the control group. This may be attributed to the brief intervention that was used. However, this analysis needs to be interpreted with caution. Although, overall, the data are consistent with the intervention being effective, the size of the true effect was probably smaller than the researcher had anticipated.

In the present study, brief intervention did not have an additional effect in comparison with the AUDIT screening. Most published brief intervention studies that did not find any additional benefit of brief intervention showed a decrease in alcohol use both in experimental and control groups. This parallel decrease was explained either by a Hawthorne effect, a natural history effect, or by regression to the mean (Beich, *et al.*, 2007). A study conducted by Beich, *et al.* (2007) did not find any decrease in alcohol use in either group. This can be explained by the fact that they included 83% of all patients screening positive in the AUDIT, and that the intervention was provided without delay as recommended (Babor & Grant, 1992; Babor, *et al.*, 2001). In the current study, this is possibly due to the lower impact of brief intervention in this target population.

Brief intervention has previously been found to be less efficient among alcohol dependents (Bien, *et al.*, 1993; Madras, Compton, Avula, Stegbauer, Stein & Clark, 2009). Furthermore, lack of differences between interventions may simply show that screening alcohol use with AUDIT and providing feedback about the score has a positive impact on alcohol-drinking behaviour (McCambridge & Day, 2008). This phenomenon has been suggested by different studies and could correspond with what Jenkins, McAlaney and McCambridge (2009) call reactivity assessment. The

results were also possibly due to spontaneous adaptations of the naturalistic treatment as usually received by both groups following AUDIT screening or BI.

The results also indicate that the overall effect of intervention in the intervention group was not statistically significant. This means that even though it cannot be disputed that the intervention had an impact, the impact was not very great or was not very significant compared to the change in behaviour that occurred in the control group. In their study Beich, *et al.*, (2007) who screened only 6897 patients, found 1087 (15.8%) risky drinkers, of whom 906 (13.1%) non-dependent drinkers became study participants and 537 (7.8%) were followed up. In another primary health care trial Senft, Polen, Freeborn & Hollis (1997) used the AUDIT to define the trial group, and included 78% of those who screened positive. The main intervention was not delivered by the doctor, but by a skilled counsellor. Nevertheless, only a modest, temporary reduction in the drinking frequency, but not in the overall amount of alcohol consumption, was achieved in this study.

Several systematic reviews have confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals (Bien, *et al.*, 1993; Kahan, Wilson & Becker, 1995; Wilk, *et al.*, 1997; Poikolainen, 1999; Moyer, *et al.*, 2002; Ballesteros, Gonzalez-Pinto, Querejeta & Arino, 2004). Until lately, little attention has been paid to the issue of the external validity of these results (Edwards & Rollnick, 1997; Beich, *et al.*, 2007. A systematic review (Berltholet, Daeppen, Weitlisbach, Fleming, Burnand, 2005) on the efficacy of brief alcohol intervention concluded that intervention could reduce alcohol consumption, but that the effectiveness of such interventions in daily practice remains unexplored.

This gap between efficacy and effectiveness has also been recognised by some of the pioneers of brief intervention (Heather & Wallace, 2003). The proposals to overcome this gap have, so far, focused on the search for even better screening tools and better implementation strategies for the SBI programme.

It is not uncommon in randomized control studies to find that there were changes in both the interventions group and control group at post-test. Previous researchers (McCambridge & Day,

screening provokes contemplation about drinking and makes the patient aware of his or her alcohol intake in a way that might not occur otherwise. In the first study specifically to examine the direct effects of screening, McCambridge and Day (2008) showed that being screened with AUDIT with no subsequent BI or other intervention led to reduced self-reported hazardous drinking, with the effect sizes being similar to the known effects of BIs. They argued that this was a "remarkable demonstration of the potency of alcohol screening as an intervention in its own right".

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

In the current study, paired samples tests analyses found a significant reduction of the AUDIT score in both experimental (t=15.47; P<0.001) and control (t=11.28; P<0.001) groups; although the experimental group had a higher reduction than the control group. Using ANOVA, there was overall no significant intervention effect between experimental and control conditions at six months follow-up (see Table 4.1). Findings related to this study were also observed in other studies. Areesantichai, Iamsupasit, Marsden, Perngparn and Taneepanichskul (2010) did the t-test comparing the change of AUDIT score difference at baseline and after the follow-up at each intervention. After the follow-up in two communities, there was a significant difference of the total score at .001. Their findings were also consistent with the previous research findings like those of Bien, *et al.* (1993); and Moyer, *et al.* (2002) which confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals.

5.5. CONCLUSION

Different authors maintain that if both the control and the experimental groups are similar before the intervention, and if only the experimental group receives intervention, differences after

intervention must be attributed to the intervention (Bennet, 2003). However, Kazdin (1980) argues that even groups which are similar at the beginning might become different owing to other reasons other than the effects of the intervention.

In this study, the experimental group showed a significant change in their drinking behaviour after the brief intervention. What is surprising is that even those in the control group also changed their drinking behaviour. There could be different reasons for this improvement. Firstly, since they were assessed at the primary health care clinics they could have been told about reducing their drinking by the nurses during their consultation. Secondly, since they were provided with information on cut-back leaflets they could have thought about it and changed their behaviour. Thirdly, the interaction in the community between the control group and the experimental group could also have led them to share information between the two tests.

CHAPTER 6: SUMMARY OF FINDINGS, LIMITATIONS OF THE STUDY, RECOMMENDATIONS AND CONCLUSION

6.1. INTRODUCTION

This chapter presents the aims and objectives of the study, hypotheses, summary of findings, limitations of the study, recommendations which are based on the findings of the study, as well as the concluding remarks.

6.2. SUMMARY OF FINDINGS

The main aim of the study was to evaluate the effectiveness of the Screening and Brief Intervention for risky alcohol use in the primary health care setting.

Specifically, the objectives of the study were:

- To pre-test the use of alcohol using the AUDIT;

The AUDIT questionnaire was pre-tested on two groups, the experimental group and the control group. At baseline, the AUDIT was administered to 140 participants divided into two groups of 70 each. The findings indicated that in the control group, 54.2% males and 14.1% females fell within Zone 2 category; 27.1% males and 2.8% females were in Zone 3; and 1.4% males and 0% females into Zone 4. Among the experimental group, 42.8% males and 27.1% females were found to be Zone 2 drinkers; 20% males and 4.2% females were in Zone 3; and 4.2% males and 1.4% females fell into Zone 4.

- To implement the SBI;

Brief intervention was conducted with the experimental group. Seventy participants received the intervention and the control group was provided only with the leaflet on cutting back. The results

indicated that among the control group, 54.2 % of the males and 14.1 % of the females were hazardous drinkers; 27.1% of the males and 2.8% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 42.8% of the males and 27.1% of the females were found to be hazardous drinkers, while 20% of the males and of the 4.2% females were found to be harmful drinkers, and 4.2% of the males and 1.4% of the females were possibly alcohol dependent.

- To post-test the use of alcohol six months after the intervention.

Six months after intervention, the AUDIT questionnaire was re-administered to both control and experimental groups. This was done to assess their alcohol intake after the intervention as well as to assess if the intervention done was successful. The results indicated a decrease in alcohol consumption in both groups. At baseline, all the participants were grouped in the zones, from Zone 2 to Zone 4 and at follow-up they were grouped from Zone1 to Zone 4. The results indicated that among the control group, 24.2% of the males and 14.2% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 31.4% of the males and 7.1% of the females were hazardous drinkers; 5.7% of the males and 4.2% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 45.7% of the males and 15.7% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 28.5% of the males and 4.2% of the females were found to be hazardous drinkers, while 2.8% of the males were found to be harmful drinkers and 1.4% of the females were possibly alcohol dependent.

The findings of this study show that the screening and brief intervention for alcohol risky drinking was effective as it reduced the level of drinking after the intervention. As in previous studies, it was also found that by asking people questions related to their behaviour, people changed that particular behaviour.

6.3. LIMITATIONS OF THE STUDY

The limitation was that the distance in time between the pre-test and post-test was six months and this threatened the internal validity of the study because some of the participants could not be reached to do the post-test.

There are different factors such as lack of time, fatigue, personal beliefs and other personal priorities that affect the way participants cooperate. The challenge that the researcher experienced during data collection was that the participants had to come to the primary health care clinic for other ailments and some complained that participating in this study was going to delay them. After it was explained that the questionnaire was not that long and that they would complete the questionnaires in the cubicle while waiting to see the sister, they cooperated.

6.4. RECOMMENDATIONS

The researcher recommends that, since the findings of this study indicate that the screening and brief intervention is effective in reducing alcohol consumption, the SBI be adopted as a compulsory routine screening at primary health care clinics. The compulsory screening can be adopted to help identify potential at-risk drinkers, for instance, mental health care users. The early identification of potential problem drinkers and intervention for mental health care users might help to prevent the relapse and revolving door syndrome. This is because most of the mental health care users who are in and out of the hospital also use alcohol.

In ante natal care, SBI can be done as part of the nurses' history taking. This will help reduce the risk of children born with Foetal Alcohol Syndrome. It will also help reduce maternal and infant death which is one of the millennium developmental goals.

In the care for and treatment of patients with chronic conditions, for example, diabetes and hypertension, compulsory SBI is also important because the majority of patients with chronic conditions get their treatment at the primary health care clinic instead of at private facilities. Most patients on chronic medication for diabetes and hypertension lead unhealthy lifestyles that include risky drinking while taking medication. Compulsory SBI will assist identify those who need intervention and continuous support.

Compulsory SBI is also necessary for all individuals receiving medical attention in any given setting even if it is not at the primary health care clinic, for example, in major companies where they provide health care services on-site. The compulsory SBI will help companies to identify those people who need intervention and they can provide support.

The compulsory screening can also be adopted in other settings that are not necessarily health related, for example, as part of issuing drivers' licenses and in the renewal of those licenses in order to prevent unnecessary accidents.

In trauma centres victims of sexual gender based violence (SGBV) are taken for further management. As part of a holistic approach to ensure a health body and mind, it is imperative to screen for risky alcohol use. This is basically because previous researchers and authors have indicated that alcohol misuse has many negative consequences, ranging from health risks, financial difficulties, trouble with the law, social relationships problems, and family problems.

Policy makers to make policies that will ensure that screening and brief intervention with regard to alcohol use are made compulsory in primary health care settings.

It can also be integrated in the training of all health care professionals

There is a need to get the cooperation of compulsory SBI health care professionals for SBI to be effective at primary health care level. The following implementation programme is recommended:

6.4.1. Background

Screening is done using the AUDIT questionnaire to find out about people's use of alcohol and it was developed by World Health Organization. The AUDIT can be used at primary health care clinics because primary health care is the first contact with the health system for people seeking care, and most people attend primary health care facilities at least once per year.

Many common problems seen at primary health care settings may be made worse by alcohol use. SBI provides an opportunity to educate patients about the risk of excessive alcohol use. There is evidence that the use of alcohol is prevalent throughout the world and is associated with a significant public health burden. Excessive alcohol use is also a risk factor for a wide variety of social, financial, legal and relationship problems for individuals and their families.

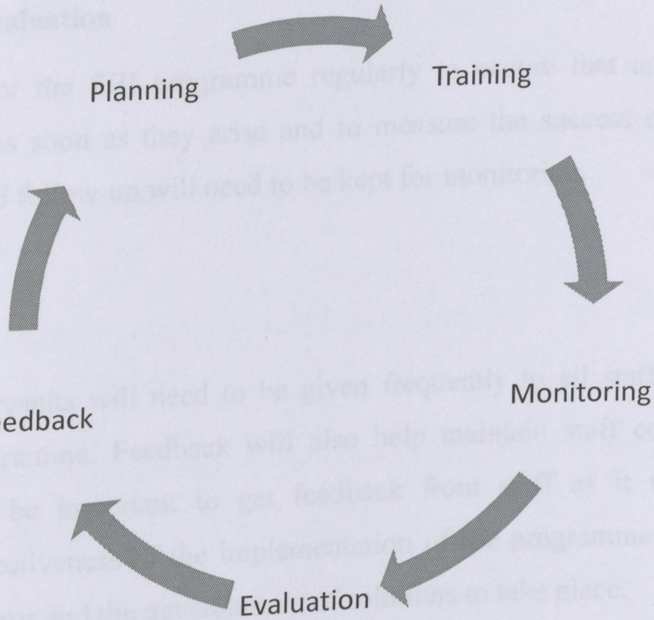

Figure 6.1: The process of implementing the SBI programme at primary health care centres

6.4.2. Planning

When implementing a programme like SBI, it is important for the staff members who are involved to understand the reasons for the programme, to feel a sense of ownership and enthusiasm for its implementation, understand their roles and be committed to making it work. There must be a coordinator for the implementation of the programme. This person will be responsible for making sure that all staff members understand their roles and responsibilities and that all the necessary tasks are carried out.

6.4.3. Training

Staff must be trained to implement the SBI programme. Effective training will enable staff members to discuss their roles and functions responsibly and also their attitudes towards screening and early intervention for harmful drinking. Training also provides opportunities for role play and supervised practice in administering AUDIT and carrying out follow-up activities.

6.4.4. Monitoring and evaluation

It is important to monitor the SBI programme regularly to ensure that any implementation problems are addressed as soon as they arise and to measure the success of the programme. Records of SBI details and follow-up will need to be kept for monitoring.

6.4.5. Feedback

Feedback of monitoring results will need to be given frequently to all staff for the on-going improvement of the programme. Feedback will also help maintain staff commitment to the programme. It will also be important to get feedback from staff as it will help provide information about the effectiveness of the implementation of the programme. This will enable the identification of problems and the development of solutions to take place.

6.5. CONCLUSION

The aims and objectives of this study were achieved. A research instrument was designed and used for both pre-test and post-test assessments. The hypothesis that was formulated and tested was supported by the study and one hypothesis was not supported.

This chapter reported the limitations that were observed. They included the drop out of some participants. Certain gaps in the research methodology were identified. These included issues related to the instrument. Four areas in which improvements can be made were listed. Recommendations based on the findings of the study were made.

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Appendix 1.

AUDIT Questionnaire

The Alcohol Use Disorders Identification Test (AUDIT): Interview Version

Dear Participant,
As part of my research I am conducting a study on the prevalence of alcohol use among patients who are coming to the clinic for consultation for any other illness. This information is important because it will assist us to tailor intervention according to your needs. To help me do this, now I would like to ask you some questions about your use of alcohol beverages during the past twelve months. Your answers to these questions will be treated in strict confidence. No details of your name will be written on this questionnaire.

Age: ___ years **Gender:** [1] Male [2] Female **Date:** ___/___/_____

A standard drink is:

A single tot of spirits (whisky, gin & vodka) (e.g., 25ml at 43%)	**1.1.1.1.1** A small glass of liqueur or aperitif *(e.g., 25ml at 30%)*	
1 can of ordinary beer (e.g., 340ml at 5%)	*1 glass of wine (e.g., 120ml at 12%)*	*Cartoon of ordinary commercial sorghum beer (e.g., 500ml at 3%)*

1. How often do you have a drink containing alcohol in the past 12 months?
   - (0) Never [*skip to Qs 9-10*] ☐
   - (1) Monthly or less ☐
   - (2) 2 to 4 times a month ☐
   - (3) 2 to 3 times a weeks ☐
   - (4) 4 or more times a weeks ☐ [___]

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   - (0) 1or 2 ☐
   - (1) 3or 4 ☐
   - (2) 5or 6 ☐
   - (3) 7, 8, or 9 ☐
   - (4) 10 or more ☐ [___]

3. How often do you have (for men) five or more and (for women) four or more drinks on one occasion?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

Skip to question 9 and 10 if Total Score for Qs 2 and 3 is =0

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

8. How often during the last year have you been unable to remember what happened the night before because you had been drunk?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

9. Have you or someone else been injured as a result of your drinking?
   - (0) No ☐
   - (2) Yes, but not in the last year ☐
   - (4) Yes, during the last year ☐ [___]

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you to cut down?
    - (0) No ☐
    - (2) Yes, but not in the last year ☐
    - (4) Yes, during the last year ☐ [___]

Record total of specific items here [___]

Appendix 2: Consent letter and consent form

Consent letter

Dear Respondent,

I am Mpho Ramarumo from the University of Venda. I am conducting research regarding Evaluation of the screening and brief intervention for risky alcohol use in primary health care clinic in Sibasa local area in Thulamela municipality: A randomized controlled trial. You are kindly requested to participate in this study by responding to the few questions that I would like to ask you. The study is conducted for educational purposes.

Please note that participation is voluntary and you do not have to take part in this study. However, I would really appreciate it if you would share your thoughts with me. If you choose to participate you may still quit at any time, there will be no penalties and you will not be prejudiced in any way.

I will not record your name and the information you provide will remain confidential and there will be no repercussions from the answers you give. The interview will last around 10 – 15 minutes. I know that you cannot be absolutely certain about some of the answers but I ask that you be as open and honest as possible in answering these questions. Some questions may be personal in nature and I will also ask some questions that may involve thinking about and recalling the past or thinking about the future. I hope that does not make you feel too uncomfortable

Thank you.

Consent Form

Consent form

I hereby agree to participate in the research on -- -------------------------- I understand that I am participating freely and without being forced in any way to do so. I also understand that I can quit at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the interview and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to me and my community on the results of the completed research.

Signature of Respondent Date: ----------------------------

Signature of Researcher Date: ------------------------------

Telephone Number:

Evaluation of the screening and brief intervention for risky alcohol use in Sibasa primary health care clinic in Thulamela Municipality: A randomized controlled trial.

by Mpho Ramarumo

Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology at the University of Venda

Promoter: Prof. K. Peltzer

Co-promoter: Prof. L.B. Khoza

Submitted on April 2014

DECLARATION

I, Mpho Ramarumo, hereby declare that the thesis for the Doctorate of Philosophy degree in Psychology at the University of Venda, hereby submitted by me, has not previously been submitted for a degree at this or any other institution, and that it is my own work in design and execution, and that all reference material contained therein has been duly acknowledged.

Signature

23/4/2014

Date

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DEDICATION

I dedicate this study to my dear family who have been there for me and supported me throughout;

My dear husband who was so supportive and encouraging through it all;

My boys Thembuluwo and Zwothezwiunakele who had to compromise and understand why I had to be absent from the house for many days while I was working on this thesis;

My late father and mother, Mr. Ntsudzuluseni Amos and Mrs. Mashudu Grace Ramarumo, who encouraged me and believed in me from the time I started school; and

My siblings, Tendani, Zwidofhela, Takalani and Ntsudzuluseni. Thank you all for your support.

ABSTRACT

Background

The use of alcohol as a drug is common in many societies, and has a history stretching back for millennia (Rodseth, 2012). There is a well-developed culture surrounding the production and consumption of alcoholic beverages, as they form part of celebrations, meals and religious rituals and frequently form the hub of social interaction (Rodseth, 2012). In a review of the data from national surveys carried out in South Africa, Peltzer and Ramlagan (2009) found that binge drinking was between 7% and 11% and risky drinking, 6.9%. South Africa appears to have one of the highest levels of alcohol consumption per drinker in the world. Up to a third of drinkers in this country drink at risky levels over weekends, and it is common for them to drink to intoxication (Peltzer & Ramlagan, 2009). Thirty to fifty percent of people, who drank in 2008, experienced at least one alcohol-related problem, such as missing work or having interpersonal problems (Schukit, 2009).

Disorders related to alcohol use are responsible for a large proportion of the health-care burden in many countries. Alcohol affects almost every organ in the body (Schukit, 2009). Alcohol-related traumatic injuries, as a result of violence and motor vehicle accidents are common in South Africa. The levels of Foetal Alcohol Syndrome are the highest ever recorded (Peltzer & Ramlagan, 2009). Studies show very strong links between drinking and the engagement in risky sexual behaviours, increasing the risk of HIV infections (Peltzer & Ramlagan, 2009). Risky alcohol use is a problem as it creates many negative consequences for both the drinker and the people near to him/her. There is a need for an effective method to help those who are risky drinkers to reduce their drinking.

The use of brief intervention can be very effective in helping the patients reduce or discontinue alcohol abuse (Rodseth, 2012). The brief intervention protocol includes four components, namely: ask about alcohol use, assess using the Alcohol Use Disorder Identification Test (AUDIT), advise using the brief intervention protocol, and assist. Intervention includes direct feedback about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (Saunders, Aasland, Amundsen & Grant, 1993).

Objectives

- To pre-test the use of alcohol with the aid of the Alcohol Use Disorder Identification Test;
- To implement the screening and brief intervention; and
- To implement a post-test to ascertain the use of alcohol 6 months after the intervention.

Data collection and analysis

A sample of 140 participants who consulted the Sibasa clinic was selected using the AUDIT questionnaire, and then randomly sampled to be either part of a control or experimental group. Each group consisted of 70 participants. After selection, the control group was provided with only an information leaflet on how to cut down alcohol. The experimental group was provided with individual counselling. Depending on their drinking behaviour, the counselling the experimental group received ranged from simple advice, alcohol education and brief counselling. Six months after the first AUDIT, both groups were reassessed to ascertain if there had been any change in drinking behaviour.

Main results

The baseline data was compared with the post test data using ANOVA and the results showed a significant reduction of the AUDIT score in both experimental ($t=15.47$; $P<0.001$) and control ($t=11.28$; $P<0.001$) groups. However, the intervention group had a higher reduction in alcohol consumption than the control group. Using ANOVA, showed that there was, overall, no significant intervention effect between experimental and control conditions at the 6 months follow-up.

Author's conclusions

Overall, brief intervention was effective in reducing the consumption of alcohol. There was improvement on the alcohol consumption of the control group. The sample was small, hence there is a need for future researchers to continue the research using bigger samples.

ACRONYMS

AUDIT	Alcohol Use Disorder Identification Test
BACs	Breath Alcohol Concentration
DALY	Disability Adjusted Life Years Lost
FBDG	Food-based Dietary Guidelines
HIV/AIDS	Human Immunodeficiency Virus/
MRC	Medical Research Council
NIAAA	National Institute on Alcohol Abuse and Alcoholism
PHC	Primary Health Care
RCT	Randomized Control Trial
SADHS	South African Demographic and Health Survey
SBI	Screening and Brief Intervention
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1. INTRODUCTION

The use of alcohol as well as the problems arising from its misuse is of widespread concern. The major impact of the misuse of alcohol is on the lives of both drinkers and the non-drinkers. These problems range from financial, legal and social problems to health problems that include the spread of sexually transmitted infections such as HIV/AIDS. The use of alcohol and other substances is also associated with the high rate of gender-based violence in South Africa (WHO, 2005).

Attempts to make people aware of the impact of alcohol misuse before complications develop owing to alcohol addiction have been made in various places. Awareness campaigns about alcohol use and misuse have been conducted to reduce the use of alcohol. However, the rate of alcohol misuse is still rising. There is a need for some form of intervention that will address the issue of alcohol use and misuse in the primary care setting where people can be reached before problems develop.

This study evaluated the effectiveness of screening and brief intervention to prevent alcohol misuse in the primary health care setting. The study used a randomized control trial or an experimental research design with patients who consulted primary health care centres for any ailments as research subjects. Participants included in the study were chosen through the use of random sampling. They were then divided into two groups, namely, the experimental group and the control group. Both groups were assessed before the intervention and after the intervention. The experimental group also received intervention before taking the second assessment. The results of both groups were compared and analysed using statistical package for social sciences (SPSS) as a way of evaluating the effectiveness of the brief intervention.

This chapter presents the following:

The background of the study, and the statement of the problem;

The aims and objectives of the study;

The significance of the study;

The proposed hypotheses;

Definitions of concepts;

Delimitations of the study;

Organization of the dissertation;

Conclusion.

1.2. PROBLEM STATEMENT

Alcohol consumption has been part of human history since time immemorial. There are numerous biblical examples and ancient myths that refer to alcohol. Local history and archaeological findings also suggest that consumption of alcohol has always been part of African culture, rituals, traditions and customs. However, the fact that people still continue drinking alcohol and pass down this habit through generations does not adequately explain why alcohol is consumed. Moreover, patterns of alcohol use have changed significantly over time and evidence suggests that the quantity consumed now is far greater than in earlier times (Gumede, 1995; Parry & Bennets, 1998). The World Health Organization (WHO) estimates that around two billion people world-wide consume alcohol (WHO, 2004). There is clearly no single reason why they do so or why different people drink to different extents. It is apparent that drinking is influenced by factors such as genetics, social environment, age, culture, gender, personality, accessibility and exposure (Parry & Bennets, 1998).

The consumption of alcohol is associated with many problems, not only for the person who drinks, but for other people who might be directly or indirectly affected by the drinking behaviour. Alcohol consumption is associated with many health-related problems and has been implicated in many violence-related injuries and deaths around the world.

In South Africa statistics have shown that alcohol has been associated with many diseases, injuries and high mortality rates. The mortuary statistics of 2002 given by the Medical Research Council (MRC) indicated that in Cape Town, Durban, Gauteng and Port Elizabeth, 45% of all non-natural deaths had Blood Alcohol Concentrations (BACs) greater than or equal to 0.05g/100ml; specifically Durban had 37%, Gauteng 40%, Cape Town 53% and Port Elizabeth 61%. Levels of alcohol were particularly high for transport-related deaths and homicides with 63% of transport-related deaths and 69% of homicides reported in Port Elizabeth, as having levels above the legal limit for driving (0.05g/100ml) (Plüddemann, Parry, Donson & Sukhai, 2004).

The MRC 2001 statistics from trauma units indicate that in Cape Town, Durban and Port Elizabeth, 39% of trauma patients had breath alcohol concentrations (BrACs) greater or equal to 0.05g/100ml; Durban had 22%, Gauteng 36%, and Port Elizabeth 57%). Levels of alcohol were particularly high with regard to transport and violence injuries with, for example, 73% of patients with violence-related injuries in Port Elizabeth and 46% patients with transport-related injuries in Cape Town having high alcohol levels above the legal limit for driving (Plüddemann, *et al.*, 2004).

The 2003 MRC statistic for the demand of specialist treatment services indicate that of 5886 people treated at 52 specialist substance abuse treatment centres in Cape Town, Durban, Mpumalanga and Port Elizabeth in the first half of the year, 52% reported having alcohol as their primary drug of abuse, with a further 13% having alcohol as their secondary drug of abuse (Myers & Parry, 2005).

Foetal Alcohol Syndrome (FAS) statistics of research conducted in Western Cape (Wellington) indicate that the prevalence of Foetal Alcohol Syndrome among Grade 1 learners was 46 per 1000 in 1997 and 75 per 1000 in 1999 (Croxford & Viljoen, 1999). Similar research conducted in Gauteng and De Aar in 2001 and in Upington in 2003 found FAS prevalence rates of 19, 103, 75 (estimates) per 1000 respectively.

A study conducted by the MRC in Atteridgeville in 2003 on alcohol and risky sex statistics among people aged between 25 and 44 found a significant positive association between various measures of alcohol use, previous month's use, frequency, problems and having multiple sexual partners or sexual relations that were regretted in the three months before the study (Morojele, Kachiengá, Nkoko, Moshia, Mokoko, Parry, Nkowane & Saxena, 2004). For example, the correlation between the quantity of alcohol consumed and the number of sexual partners (over a lifetime) was 0.436.

In 2000 a report by MRC on the statistics of alcohol and family violence, indicates that in Cape Town, Durban and Johannesburg between one-third and half of charged offences categorized as family violence, reported that perpetrators were under the influence of alcohol at the time of the alleged offence (Parry, Plüddemann, Louw & Leggett, 2004). Other reports indicate that academic failure and absenteeism were also significantly associated with alcohol consumption (Peltzer, Cherian & Cherian, 1999a).

This gives a picture of alcohol consumption in South Africa.

Many people are ignorant of the facts regarding the impact and effects of drinking alcohol; they do not know the dangers associated with drinking alcohol. The question arises: What needs to be done to reduce this problem?

This study sought to evaluate the effectiveness of Screening and Brief Intervention (SBI) in the primary care setting as an area where problems associated with the use of alcohol can be addressed.

1.3. AIMS AND OBJECTIVES OF THE STUDY

The main aim of the study was to evaluate the effectiveness of screening and brief intervention in the primary health care setting in reducing the use of alcohol.

Specifically, the following were the objectives of the study:

- To pre-test the use of alcohol using the Alcohol Use Disorder Identification Test;
- To implement screening and brief intervention;
- To post-test the use of alcohol six months after the intervention.

1.4. SIGNIFICANCE OF THE STUDY

It is the intention of this study to show the strength of screening and brief intervention for risky alcohol consumption.

The findings of this study are also useful for training of health care providers on how to screen and intervene for risky alcohol use.

1.5. HYPOTHESES

For this study, the following hypotheses were formulated:

a) If patients are screened for their alcohol use and subjected to an intervention strategy, they will change their drinking behaviour.
b) If patients are screened for their alcohol use and receive only an information leaflet on how to cut down on their drinking, they will not change their drinking behaviour.

1.6. DEFINITION OF CONCEPTS

Alcohol misuse: The over-use or incorrect use of beverages containing alcohol or ethanol

Evaluation: A strategy used to determine the worth or value of an intervention

Screening: A method used to assess the presence and the extent of the symptoms of a problem

Brief intervention: An action used for a limited time to assist in the elimination of the existing symptoms of a problem.

DELIMITATIONS

The study included only patients who presented themselves for treatment of any ailments in the clinics in the Sibasa local area in Vhembe District Municipality.

1.7. ORGANIZATION OF THE DISSERTATION

Chapter 1 provides an introduction to the study.

Chapter 2 presents a literature review about the nature of alcohol misuse.

Chapter 3 sets out the research methodology used to conduct the study.

Chapter 4 presents the findings of the study.

Chapter 5 presents a discussion of the findings of the study.

Chapter 6 summarizes the findings of the study, draws conclusions from the findings and presents recommendations based on the conclusions.

1.8. CONCLUSION

This chapter presented the background of the problem, the problem statement and the hypotheses regarding alcohol screening and brief intervention. It outlined the main aim, the objectives and the significance of the study. Significant concepts were defined and the study was delimited.

The chapter that follows reviews the literature on the nature of alcohol use.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, literature related to the study is reviewed. The chapter is divided into sub themes that include: alcohol use in South Africa, theoretical perspectives, categories of alcohol drinkers and the causes of alcohol use. It also reviews previous studies about the screening and intervention with regard to alcohol consumption.

2.2. PREVALENCE OF ALCOHOL USE IN SOUTH AFRICA

A report by the Medical Research Council in South Africa indicates that in 1997, just under half men (45%) and one-fifth of women (17%) 15 years and older in South Africa reported that they consumed alcohol. Rates of drinking differed substantially by population group and gender, with the highest levels of alcohol reported by white males (71%), followed by white females (51%), and Coloured males (45%). The lowest rates were reported by African and Asian females (12% and 9% respectively). For both men and women, higher rates of drinking were recorded in urban areas. For males the highest drinking levels (50% or more) were reported in the Free State and Gauteng and the lowest levels (28%). were reported in the Northern Province. For females, the lowest levels were also recorded in the Northern Province (9%), with the highest levels in the Free State, Western Cape and Northern Cape (23%-25%). For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year age groups (MRC, 1998; Flisher, Parry, Evans, Muller & Lombard, 2003).

These figures are likely to be inaccurate given the nature of broad household surveys, where respondents may be dishonest about behaviours that may be stigmatized or disapproved of in certain communities and where inadequate attention may be given to setting respondents at ease when they are asked sensitive questions (Gfroerer, Wright & Kopstein, 1997). Female drinking, in particular, is often disapproved of in many African communities and, as a result, is likely to be under-reported (Mphi, 1994; Siegfried, Parry, Morojele & Wason, 2001).

Pengpid, Peltzer and Van der Heever (2011) assessed the prevalence of alcohol use and associated factors among outpatients in an urban hospital in South Africa, and their study found that 41.2% of the men and 18.3% of the women were hazardous drinkers. In a sample of 1,532 selected patients, 3.6% of the men and 1.4% of the women met the criteria for probable alcohol dependence or harmful drinking. Globally, the prevalence of alcohol use is estimated to range from 4% to 29% for hazardous drinking and from less than 1% to 10% for harmful drinking (Reid, Feilin & O'Connor, 1999). Similar prevalence rates of hazardous or harmful alcohol use in health care settings have been reported from various African countries (Saunders, Aasland, Amusend & Grant, 1993; Chinyadza, Moyo, Katsumbe, Chisvo, Mahari, Cock & Mbengeranwa, 1993; Abiodun, 1996; Bekker & Van Vekden, 2003; Peltzer, 2006; Ward, Mertens, Flisher, Bresick, Sterling, Little & Weisner, 2008).

2.3. PREVALENCE OF ALCOHOL CONSUMPTION INTERNATIONALLY

Previous research in Australia found that 10% of people drank at levels considered to be harmful for long-term health, 7% at 'risky' levels, and 3% at 'high risk' levels. Twenty per cent of the people put themselves at risk of alcohol-related harm in the short term. Seventeen-and-a-half per cent of people had not consumed alcohol in the previous 12 months (Laslett, Room, Ferris, Wilkinson, Livingston & Mugavin, 2011).

In the USA the prevalence of alcohol use by adults over 18 years of age who were regular drinkers was found to be 50.9%. Among those who were infrequent drinkers and 18 years and above, the prevalence was 13.6% (National Health Interview Survey, 2012).

2.4. ALCOHOL USE GLOBALLY

According to the World Health Organization (2002), in 2000, the global burden of alcohol use in terms of death and disability was between 1.6% (for high-mortality developing countries) and 9.2% (for developed regions) of total Disability Adjusted Life Years lost (DALYs), accounting for 4.5 billion years lost. While South Africa is a high-mortality developing country, it has

recently been calculated that alcohol-related harm accounted for 7.1% of all deaths and 7.0% of Disability Adjusted Life Years Lost (DALYs) in 2000, resulting in 1.1 million life years lost in that year (Schneider, Norman, Parry, Plüddemann & Bradshaw, 2007). Alcohol was the third largest contributor to death and disability after unsafe sex/sexually transmitted infections and interpersonal violence. The three largest contributors to the burden specifically related to alcohol, included homicide and violence (40% of alcohol's burden), alcohol use disorder (15%) and road traffic injuries (15%).

It has been estimated that South African adult per capita alcohol consumption in 2005 was between 10.3 and 12.4 litres of pure alcohol. Of this consumption, 2.5 litres per person was homebrewed and illegally produced alcohol (Rehm, Room, Monteiro, Gmel, Graham, Rehn, Sempos, Frick & Jernigan, 2004). According to the World Health Organization (2002), 45% of men and 70% of women in Afro Region E (which includes countries like Ethiopia and South Africa) abstain from drinking alcohol. Therefore, while the consumption per adult is only 7.1 litres of pure alcohol in this region, consumption per adult is 16.7 litres per year (Rehm, Rehn, Room, Monterio, Gmel, Jernigan & Frick, 2003). It has been estimated that per capita consumption among drinkers in South Africa is likely to be even higher than the regional average (Parry, 2005). This gives South Africa one of the highest levels of alcohol consumption per drinker anywhere in the world, putting it at a similar level as countries such as the UK and the Ukraine (Rehm, *et al*., 2003).

Rehm, *et al*., (2003) indicate that the increased consumption of alcohol or heavy drinking is an important risk factor for many health problems and is thus a major contributor to the global burden of disease. According to the 2009 WHO report, the detrimental impact of alcohol was the third on the burden of disease and injury after unsafe sex and childhood underweight status. It exceeded that of many classic risk factors such as unsafe water and sanitation, hypertension, high cholesterol or the use of tobacco (WHO, 2009). Alcohol consumption has been identified as an important risk factor for illness, disability and mortality (Rehm, *et al*., 2004). In 1996, it was reported that in Australia excessive alcohol was responsible for 4.9% of the burden of disease.

Rehm, *et al.*, (2003) has argued that alcohol consumption can be a direct cause or a partial cause of the following conditions and incidents:

- Cirrhosis of the liver;
- Infectious diseases;
- Diabetes;
- Pancreatitis;
- Unintentional and intentional injuries;
- Breast, oral, liver and colorectal cancers;
- Stroke, inflammatory heart disease and hypertension;
- Road traffic accidents;
- Memory lapse;
- Falling, suicide, and drowning.

2.5. ALCOHOL USE IN SOUTH AFRICA

The guidelines provided by the Food-based Dietary Guidelines (FBDGs) in South Africa include references to alcohol. The FBDG on alcohol intends to make a contribution towards encouraging those members of the South African population who misuse alcohol, particularly by binge drinking, to partake of low-risk drinking or sensible drinking. Low-risk drinking is defined (using Australian guidelines) as no more than four units of alcohol per day for men and no more than two units for women, with at least two alcohol-free days per week (Van Heerden & Parry, 2001).

South Africans consume well over 5 billion litres of alcoholic beverages per year. The figure could be nearer to 6 billion litres, depending on the estimate of the amount of sorghum beer consumed. Roughly two thirds of the total alcohol consumed in South Africa is malt or sorghum beer. In terms of alcoholic beverages this translates to roughly 4.2 billion litres or roughly 90%

of the alcoholic beverages consumed. Roughly 15% of the total alcohol consumed is wine (Myers & Parry, 2002).

Per capita consumption of alcohol in South Africa is between nine and ten litres per year, which places the country among the higher alcohol consuming nations. Since 1993 the level of per capita adult alcohol consumption appears to have been rising, after a decrease in 1990 and 1991 (Myers & Parry, 2002).

Based on the findings of the Department of Health's South African Demographic and Health Survey (SADHS) conducted in 1998 by the Medical Research Council (1998), just under half of men (45%) and one-fifth of women (17%), 15 years and older, reported that they consumed alcohol. For both sexes, the rate was 28%, which translates to 8.3 million South Africans who were 15 years or older. For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year group.

Risky drinking was defined as drinking five or more standard drinks per day for men and three or more drinks per day for women. While communal drinking is often also risky, respondents who reported communal drinking in the Medical Research Council (MRC) study were not classified as 'risky drinkers'. Rates of risky drinking for males and females were very similar and were roughly 4-5 times greater during weekends than on weekdays, with one-third of current drinkers drinking at risky levels over weekends. For both males and females, risky drinking at weekends appears to be highest among persons in the middle categories for ages 35-44 years for males and 45-54 years for females. Seven per cent of pregnant women acknowledged current drinking (MRC, 1998).

2.6. THEORETICAL PERSPECTIVES ON DRINKING PROBLEMS

There are many theories that can be used to explain behaviour related to alcohol consumption. Some of those theories are based on the psychological explanations of drinking behaviour while others are more medically based. For the purpose of this study, only three psychology based theories will be discussed in this section as the conceptualization of this study.

2.6.1. Social learning theory

The social learning theory is based on the idea that people behave the way they do largely because they have learned to behave in that way. According to the social learning theory, learning can take place on a number of levels with conditioning at one extreme and abstract thought and reflection at the other (Heather & Robertson, 1997). Classical conditioning as a way of learning happens this way: an unconditional stimulus produces an unconditioned response, and then a neutral stimulus is presented shortly before the unconditioned response. After this has happened several times, the neutral stimulus comes to have an effect similar to the unconditioned stimulus; it produces a similar response.

Conditioning plays an important part in behaviour (Heather & Robertson, 1997). Research shows that learning has a great effect on the development of harmful drinking behaviour. People learn how to drink, what to expect from drinking and to use drinking for certain purposes. People who have experienced rules about appropriate drinking learn those rules and rituals (although they may not always use what they have learned). Those who see mostly uncontrolled drinking with the intention of intoxication learn to drink that way (Heather & Robertson, 1997).

In instrumental learning, learning is strengthened each time a response is followed by satisfying consequences. Acts that are reinforced tend to be repeated. People are also shaped by the consequences of drinking. Human beings continue to behave in certain ways if they get positive consequences for the behaviour. If a person's social group drinks heavily and that person receives positive feedback from friends for drinking the same way, he or she will be more likely

to continue the pattern. If a person gets other rewards from drinking, for example, being more social or being less anxious he or she may also learn to use alcohol as a way of getting that reward and as a way of coping with uncomfortable and painful feelings. These positive consequences may be more emotionally powerful than negative ones like hangovers or family problems (Coon & Mitterer, 2012).

Modelling, as a way of learning, happens through observing the behaviour of others. In terms of alcohol consumption parents serve as models of behaviour for their offspring. Children imitate the patterns of behaviour set by their parents, whether it is abstinence, moderate drinking or heavy drinking (Herd, 1994; Windle, 2000). Parents are the agents by whom adolescents learn appropriate or inappropriate norms and values related to alcohol use (Herd, 1994). This theoretical construct has particular significance for explaining patterns of initiation into alcohol use, where the parent often serves as the first model of drinking behaviour. Often, an individual's first experience with alcohol occurs in the family setting, providing parents with the opportunity to moderate the child's interpretation of the meaning of alcohol use (Anderson, Bruijn, Angus, Gordon & Hastings, 2009). In addition, Tyler (2008) found that patterns of excessive alcohol use in parents influence children to a greater extent earlier in adolescence, before the influence of peers grows; first experiences with alcohol and initiation into its use are related to models of parental use acquired through social learning.

2.6.2. Psychosocial theories

All experts, including those who believe in the disease model, agree that psychological, social and environmental events are important elements in the development of problem drinking patterns (Heather & Robertson, 1997).

Habit is a learned element of drinking. People learn to use alcohol in certain situations, including developing the habit of drinking heavily. In the North, for example, people may learn the habit of drinking heavily each time they go to the bar, whereas they might not drink at all otherwise. Habit can be hard to change because it is a routine that people have developed without really thinking about it, a way of behaving that has become an automatic reaction. There is much

research that shows that if a person expects to be affected by alcohol in a certain way, she/he will in fact experience that effect (Heather & Robertson, 1997).

There have been experiments showing that even if people are drinking non-alcoholic drinks they can feel intoxicated (that is, they behave as if they are intoxicated and believe that they are intoxicated), if they believe that they are drinking alcohol. The behaviour that people expect alcohol to produce will consequently be the way they will behave. However, most people do not consciously realise that their beliefs influence their behaviour. Also, if people believe and expect that intoxication is a normal part of drinking, they may well drink to intoxication. If they believe they have no control over alcohol once they have a drink, they may well drink in an uncontrolled way. If people expect alcohol to lead to aggression, they may well act aggressively. Many studies show that alcohol-related violence is a learned behaviour, not a universal and automatic result of heavy drinking (Heather, 1995).

Alcohol may, however, make people less able to control anger and aggression. Cultures/societies develop attitudes, beliefs, expectations of effects and standards about alcohol use, as well as ways of discouraging unacceptable use (Graham, Leonard, Room, Wild, Pihl, Bois & Single, 1998). Penalties can be legal such as making drunk driving a criminal offence. They can also be less structured, but highly effective negative consequences like social shunning and gossip. The greatest problems seem to arise when a society tolerates heavy drinking and drunkenness rather than having strong clear rules about acceptable and unacceptable drinking behaviour and meaningful punishments (Parry, *et al.*, 2004).

Subcultures are smaller groups within the main society, for example, teenagers, friendship groups, or church members. Subcultures can also develop their own attitudes, rules, and expectations about drinking. For example, heavy binge drinking is often seen as normal and acceptable by college students. However, people who belong to religious groups that have strict rules against alcohol do not accept drinking at all (Parry, *et al.*, 2004).

Some people with certain personality characteristics and in certain environmental circumstances may be at greater risk of developing alcohol problems. For example:

• Certain mental disorders (e.g., anxiety, depression) may be more likely to lead to harmful alcohol use;

• People who have antisocial personalities (that is, they are aggressive, do not follow the rules of society, do not take responsibility for what they do, do not relate well to other people, etc.) are more likely to abuse alcohol;

• People whose social group drinks heavily may develop problems themselves;

• Highly stressful life events like isolation, violence and abuse may create a greater risk of alcohol abuse as a coping method.

Research also shows that "substance abuse frequently occurs within a social context characterized by social and economic disadvantage" (Parry, 2000). That is, people more often drink in problematic ways in situations of poverty and unemployment, low education level, unstable family conditions, unstable social environments, and lack of resources and supports. The connections between alcohol abuse and these other factors that affect health are complex. However, it is likely that when individuals do not have the tools to make a meaningful life, or feel a lack of secure rootedness in family and society, and/or do not have a sense of direction for a positive future, they may learn to use alcohol as a coping tool. This alcohol misuse then creates even more problems. To a great extent, then, alcohol misuse and problems arise out of personal psychological factors, learned social patterns, the rewards a person gets from drinking, and the person's expectations. Harmful and disadvantaged environmental, economic and social conditions increase the likelihood that people will develop problems (Parry, 2000; Kushner, Abrams & Borchadt, 2000; Jané-Llopis & Matytsina, 2006).

2.6.3. Harm Reduction Model

The harm reduction approach takes the holistic view that the essential goal of helping should be to decrease the "health and social problems associated with the use and control of alcohol and other drugs among all individuals, families and communities" (Marlatt, Larimer, Baer &

Quigley, 1993). It is a public health approach. Its goal is not necessarily to stop people from drinking, but to teach them how to drink without creating physical, legal, financial, or social problems for themselves and others. Harm reduction is not one particular strategy. It encompasses a variety of methods to help individuals control their drinking or their desire to drink. It includes counselling for other client issues either directly or through referrals to other care providers.

Abstinence is not a requirement in harm reduction methods, but it is always presented as an option. It is a fact that alcohol provides pleasure in many ways and most people either do not want to quit drinking completely, or they have mixed feelings. It is also a fact that some people simply should not drink at all, either temporarily (e.g., during illness, pregnancy, or if they are on medications, etc.) or permanently (e.g., those who have developed serious alcohol dependency). The harm reduction approach believes clients cannot be forced to do something they do not want to do, they have a right to choose what they want, and a reduction in problems is better than no change at all (Marlatt & Witkiewitz, 2002).

The counsellor does not take the position of being the authority telling clients what to do. Instead, the counsellor sets up a respectful and collaborative relationship that acknowledges clients' rights to participation, control, and ownership of their life decisions. Therefore, the counsellor helps clients determine what kind of change they want to accomplish (a specific cut-back level or abstinence) and then provides ideas and activities for reaching the goal. Clients' goals may change and their plans may change. There is much evidence that when people are allowed to make their own choices, quite a few in fact choose abstinence, sometimes immediately, sometimes later on. Furthermore, they will be more successful because they will be more committed to the goal. This is true in many areas of life. When people are ordered to do something, they may resist. Harm reduction methods are also extremely useful in treatment aftercare, and in helping clients manage drinking triggers and psychological habits (Marlatt, Blume & Parks, 2001).

Some people question the harm reduction approach. They believe that if alcohol abusers are told they can learn to control their drinking, it will lead to increased drinking and eventually the development of dependence. However, all the evidence shows just the opposite. Harm reduction can be highly successful in helping those with alcohol abuse disorders to reduce their drinking to levels that create no problems or at least fewer problems (Marlatt, *et al*., 1993; National Institute for Alcohol Abuse and Alcoholism, 2000). It has also been shown to be a useful middle step in helping alcohol dependent people become abstinent. People trying to change heavy drinking patterns or achieve abstinence are not often immediately successful. It can take time and several attempts. Harm reduction provides a less stressful, less guilt-producing path to change while reducing community, family, and individual physical and mental harm. Harm reduction has been shown to be a powerful tool for change, but it must be presented appropriately (Marlatt & Witkiewitz, 2002).

It is not enough merely to tell people to cut down on their drinking or to stay away from alcohol. Alcohol misuse is not an isolated behaviour. Effective harm reduction counselling is a holistic process that helps people look at their whole lives and the role alcohol plays (Marlatt, Blume & Parks, 2001). Areas to be considered include the following:

- Assessing drinking levels and the possible future consequences of the risky drinking;
- Assessing readiness to change;
- Looking at underlying factors in harmful drinking (e.g., drinking cues or triggers, self-esteem, family problems, past trauma, etc.);
- Analysing the benefits and problems of current drinking;
- Setting goals;
- Preparing for possible positive and negative consequences of change;
- Monitoring/managing drinking behaviour and/or the desire to drink;
- Learning new ways of handling problems, dealing with emotions, relating to others, finding peace, getting what one wants, etc.

A longer period of such outpatient treatment (e.g. 10 to 12 sessions) may be necessary for those with serious alcohol and/or personal problems.

2.6.4. Motivational interview

Why does one session of basic advice work with some people and intensive treatment (even with aftercare) not work with others? Alcohol misuse is resistant to change. Evidence suggests that a person's readiness to change is a major factor in success. No change is possible unless the person acknowledges a problem and wants to do something about it. As in other areas of life, people change only when they have decided there is a need to change. Experts agree that empathic (understanding) motivational interviewing is an effective treatment tool that helps clients come to their own realization of negative consequences and the need for change (Baer, Roserngren, Dunn, Wells, Olge & Hartzler, 2003).

One model increasingly used by many alcohol treatment programmes is the Stages of Change model. This model was originally developed more than 20 years ago to help people stop smoking, but has been found to be an effective tool in many kinds of change. This approach looks at behaviour change as a process that depends on the person's thinking about alcohol use and problems.

Five steps of change according to Prochaska's motivational interview

• Pre-contemplation

During this stage, the person might have some awareness and concern about his/her excessive/inappropriate drinking, but does not really acknowledge that there is a problem. For example, bosses or family may have said something or the person may have been involved in a fight while drunk, etc. She/he may think about changing sometime, but not in any definite way. Counsellors at this stage gently help the client to come to the conclusion that perhaps there is a reason to change (Prochaska, DiClemente & Norcross, 1992).

• Contemplation

The person decides to do something about his/her drinking, although there are probably mixed feelings. The person may be determined that she/he will change, but not yet. At this point, the person will be more willing to discuss the pros and cons and options. Counselling focuses on helping this person to see the negative consequences of drinking alcohol that are already there in his/her life (Prochaska, *et al.*, 1992).

• Preparation

The person makes an active decision and commitment to change. The counsellor helps the client gather information, assesses options and considers positive and negative consequences of each option. This is an important stage because this is the beginning of a plan. The plan must be based on sufficient information and on the client's needs.

• Action

At this stage the person is fully committed and begins the plan to cut down alcohol consumption or stop drinking. The person uses strategies that will lead to the achievement of the goals set.

• Maintenance

The person is following the plan and uses strategies to stay on track. The person practises the new strategies to help him/her to stay on track.

• Relapse

As new habits do not come easily, most people will probably fall back into earlier patterns at least occasionally. It is important to help them understand that they may get off track, but they can plan how to get back on track. Relapses are excellent learning situations for examining what led this to happen and what can be done the next time to prevent it from happening again. People

may go back and forth between stages several times before a change is complete. They should simply be helped to work through the issues and move on again (Prochaska, *et al.*, 1992).

Principles of motivational interview

Miller and Rollnick (2002) describe four main principles that are essential in motivational interviewing as follows:

• Expressing empathy:

A counsellor must express empathy as it helps build a trusting relationship (respect, acceptance of what the client says and how she/he sees things, understanding of feelings and circumstances, encouragement of expression of thoughts and feelings, without counsellor judgment).

• Developing discrepancy:

The counsellor helps clients who believe they do not have a problem to see that the belief does not fit with the facts of their lives. For example, the client may say that alcohol is not a problem or that he has a job, his girlfriend does not mind his drinking, etc. At the same time he might also mention that he is off work for a couple of days a week because of hangovers and that he and his girlfriend have been arguing a lot. This contradicts the first statements, but at this point the counsellor would ask some non-confrontational questions related to those events, which encourages the client to think about the situations and the possible role of alcohol. However, the client needs to make the connections her/himself, not the counsellor.

• Rolling with resistance:

If the client denies problems even though they may be obvious, or resists reviewing her/his behaviour, the counsellor should not argue. Instead, the counsellor should eventually, gently turn that resistance back in a way that gets the client thinking again. For example, "OK, I know what you're saying. But there's something you mentioned last time that I don't understand. . . . Can you tell me more about . . . ?"

• Supporting self-efficacy: The counsellor should always make it clear that clients have the ability to make the changes they want, have control over their lives and have personal strengths and resources that make them capable. The counsellor believes in the client and the client learns to believe in him/herself.

Once clients themselves have decided that they may need to do something about their problem, the counsellor and client can move to the next stage which is making a plan. Motivational interviewing is an important part of all helping strategies, from brief counselling to residential treatment (Fleming, Barry, Manwell, Johnson & London, 1997).

2.6.5. Health belief model

The Heath Belief Model (HBM) is commonly used in health education and health promotion (Glanz, Rimer & Lewis, 2002). It was developed in the 1950s in an effort to explain why screening programmes offered by the U.S Public health Service, especially for tuberculosis, were not very successful (Hochbaum, 1958). The model propositions that health-seeking behaviour is influenced by a person's perception of a threat posed by a health problem and the value associated with actions aimed at decreasing the risk (Hochbaum, 1958). Personal perception is influenced by a wide range of interpersonal factors affecting behaviour.

The Health Belief Model has four main hypotheses, namely perceived seriousness, perceived susceptibility, perceived benefits and perceived barriers (Glanz, Rimer & Lewis, 2002). Each of these hypotheses may be used on its own or combined with others to explain behaviour. The model was further modified to include cues to action, motivating factors and self-efficacy.

Perceived seriousness explains how an individual either changes or maintains a detrimental behaviour based on how serious they believe the consequences of maintaining the behaviour are.

This perception is either based on medical information or personal beliefs about the consequences of the behaviour if it is not changed.

The greater the perceived risk, the greater the likelihood of engaging in risk-reducing behaviour; this is termed perceived susceptibility. If individuals recognize that their behaviour when they are under the influence of alcohol makes them vulnerable to many health hazards, they would try to engage in risk-reducing behaviour. However, if an individual does not believe that their behaviour is risky, the chances are that the individual will continue indulging in risky behaviour. When perceived seriousness is combined with perceived susceptibility, good health behaviour is promoted (Glanz, Rimer & Lewis, 2002).

The next hypothesis is perceived benefits. This is a personal opinion of the value of a new behaviour in decreasing the risk of contracting a disease. New health behaviour might be adopted if, by doing so, one perceives that it will reduce one's risk of developing a disease. If an individual perceives that reducing the amount of alcohol they take, avoiding certain places which may trigger alcohol consumption or even deciding to stop drinking altogether will reduce his/her risk of experiencing problems arising from his/her drinking behaviour; the chances are that he/she will change their behaviour (Glanz, Rimer & Lewis, 2002).

Perceived barriers are an individual's appraisal of the stumbling blocks that are in the way of adopting new health behaviour. For instance, a female student who lives in a university residence where other students perpetually host parties may perceive that as a barrier to her changing her drinking habits. To adopt healthy behaviour, one has to believe that the benefits outweigh the consequences of continuing with the old risky behaviour (Centre for Disease Control and Prevention, 2004).

Modifying variables, such as culture, education level, skill, motivation and previous experiences, were added to the four hypotheses. These are the characteristics of an individual that influence personal views. Previous experiences increase the perception of vulnerability as one would be

aware of exposure to risk. They may also reduce one's perception of the seriousness of the behaviour because the consequences were dealt with easily (Glanz, Rimer & Lewis, 2002).

Cues to action are events, people or things which motivate people to act or change behaviour. These include a reminder by a family member, mass media campaigns (Graham, 2002) and advice from others (Ali, 2002). Specifically, significant others who constantly remind individuals about their behaviour or reproach the use of alcohol, or posters warning the public of the dangers of alcohol abuse serve as cues to action.

Self-efficacy occurs when one believes that one is able to accomplish something (Bandura, 1977). Bandura proposes that, generally, individuals do not engage in a new experience unless they believe that they can go through with it. An individual may believe that changing his or her behaviour will be beneficial. However, if their perception of potential barriers is greater than that of perceived benefits, they will probably not adopt new behaviour.

2.7. CONCEPTUALIZATION OF ALCOHOL CONSUMPTION

Drink	Volume	% of alcohol in a drink	Units of alcohol
Can of lager or cider	340 ml	5%	1 unit
Glass of wine	120 ml	12%	1 unit
A single tot of spirits(whisky, gin or vodka	25 ml	43%	1 unit
A small glass of liqueur or aperitif	25 ml	30 %	1 unit
Cartoon of ordinary commercial sorghum beer	500ml	3%	1 unit

Table 2.1: Description of alcoholic beverages

2.7.1. Categories of alcohol drinkers

According to WHO (2000) there are different categories of alcohol drinkers ranging from those who drink safely and sensibly to those who are dependent on alcohol. These categories depend on the quantity of alcohol consumed and the frequency of drinking. These categories will be discussed below.

2.7.1.1. Safe and sensible drinking

Sensible drinking is defined by WHO (2000) as the consumption of alcohol, while still remaining\ in control of one's own body, mind and behaviour. People who fall under this category drink only a limited amount of alcohol and do not drink every day. Sensible drinking for men is four units of alcohol per occasion, and three units for women on one occasion as per the table above. It is advisable not to drink at all in the following situations:

- When pregnant or breast feeding;
- When very tired;
- When food has not been consumed for several hours;
- When driving and operating machinery;
- When taking medicine;
- If one is not in control of one's drinking.

2.7.1.2. Low risk drinking

The social drinker consumes alcohol in amounts and circumstances that appear socially acceptable. However, this person may develop a serious alcohol problem if there is an inclination to over-indulge or occasionally to use alcohol to cope with stress (Edwards, Marshall & Cook, 1997).

2.7.1.3. Harmful drinking

Harmful drinking is drinking alcohol that results in adverse effects; for example, physical or psychological harm. Harmful drinkers consume alcohol above the recommended daily, weekly, or per-occasion amounts; that is, more than three standard drinks for men and more than two standard drinks for women and all above 65 years of age.

The harmful drinker drinks in socially appropriate circumstances, but actively seeks an occasion for drinking in a social situation. He or she has more than two drinks every day, continuously seeks out situations in which to drink, and may often over-consume but not exceed the alcohol consumed by her/his peers. He or she may never appear drunk or seem to be affected in social or work routines, but as drinking escalates, it becomes increasingly linked to seeking physical or psychological relief. Problem drinkers emerge from this population. Neither the person nor his/her acquaintances suspect an alcohol abuse problem (Edwards, *et al.*, 1997).

2.7.1.4. Hazardous drinking

Harmful drinking is the consumption of alcohol that places a person at risk for adverse health effects. Alcohol consumption is associated with social consequences such as problems with family, fighting and financial problems. Most people who experience alcohol-related problems have mild to moderate problems. These people are unlikely to meet diagnostic criteria for severe alcohol dependence or alcoholism, despite their frequent drinking and occasional negative consequences from drinking. The majority of these groups are more appropriately classified as problem drinkers (Burge & Schneider, 1999).

The problem drinker gets drunk on occasion and also exhibits medical, legal, social or psychological consequences of excessive alcohol consumption; and makes or thinks of making attempts at cutting down or quitting. Functioning may vary from seemingly intact behaviour to difficulty in coping. The drinker may deny a drinking problem and attribute blame to external events or persons. Denial is common even among those with multiple arrests for drunken driving (Edwards, *et al.*, 1997).

2.7.1.5. Alcohol dependence

The alcohol-dependent drinker tries to consume the same excessive amount of alcohol regardless of mood situation, although external circumstances might constrain drinking for a time. Most continue to work, some even in high positions. Alcohol is given top priority in all situations; for example, one goes to a party to drink, not to socialize. Tolerance to alcohol develops, and withdrawal symptoms may be noted during the workday when the blood alcohol level drops. Drinking at lunch and during the cocktail hour is needed to relieve symptoms. The patient is aware of the compulsion to drink but is difficult to reach unless family or the employer notes that there is a problem or serious medical complications develop (Edwards, *et al.*, 1997).

2.7.1.6. Severely alcohol dependency

This is a severely deteriorated drinker who maintains a constant state of intoxication; has no care for his or her person or surroundings; undergoes periodic hospitalization for detoxification and for medical care necessary after alcohol-related trauma or organ damage (Edwards, *et al*., 1997).

2.7.2. The role of alcohol in South African history

During pre-colonial days, the consumption of alcohol was preserved for elders, and other senior or authority figures, including health practitioners and healers. Solitary drinking was not tolerated. Drinking did not occur every day but only on special occasions such as religious feasts, funerals and marriage ceremonies. Drinking was less common among youth and women of childbearing age. These were only allowed to drink only when engaging in rituals and religious ceremonies (Gumede, 1995). Traditionally in South Africa, alcohol served many purposes. It was used as a means of payment, and for strengthening friendships, and was associated with manhood and the strengthening of the body (Setlalentoa, Pisa, Thekisho, Ryke & Loots, 2010).

Since then alcohol has been prominent in South Africa, both socially and politically. Women used to cultivate maize and sorghum to produce food and ferment beer. Traditional African beer played an important role in the lives of black people of South Africa, both culturally and religiously. People would drink alcohol when traditional ceremonies and feasts were held

(Gumede, 1995). According to Gumede (1995), two feasts recorded in the history of black people are the feast of the first fruits (Umkhosi Wokweshwana) which took place after the first harvest, and the festival of the Queen of the Rainbow (Umkhosika Nonkhubulwana) involved the consumption of low alcohol content beer. These feasts were celebrated by women after the first rainfall.

Gumede (1995) argues that the British colonial government prohibited drinking among non-white population groups as it believed that alcohol caused social decay and disorder among blacks. With the arrival of European liquor called “Cape Smoke”, Africans began to move away from traditional African beer to liquor. This was seen as unacceptable by European farmers because they believed alcohol made Africans disobedient. The disobedience was displayed when workers were under the influence of liquor. They no longer took orders, would not come to work, and would even talk back to their employers. This led to many laws being passed to control drinking by Africans.

Among white South Africans, malt, beer and wine were popular drinks, particularly during mealtimes and social functions such as weddings, communion at church (wine) and sporting events. To black South Africans, among many, alcohol is still a symbol of personal and economic freedom (Gumede, 1995).

During modern times, drinking is widespread among different members of the community. With the laws/controls that regulated production, and the sale and access to alcohol by Africans led to the eruption of illegal liquor outlets, such as shebeens. These are private homes where alcohol is brewed, sold and consumed. The informal/illegal liquor sector in South Africa is not regulated and operates outside the law. It comprises hundreds of small home brewers of sorghum beer. The informal liquor sector also consists of as many as 200 000 liquor outlets, largely shebeens. In South Africa, the alcohol industry is a major source of employment and government revenue (Gumede, 1995; Parry & Bennets, 1998; Setlalentoa, *et al*., 2010).

2.8. CAUSES OF DRINKING PROBLEMS

Drinking behaviour, and the problems with which it is associated, are determined by multiple, interacting factors that concern both an individual and his or her environment. Those factors will be discussed in the following section.

Research shows that many adolescents start to drink at very young ages. In 2003, the average age of first use of alcohol was about fourteen, compared to about seventeen-and-a half in 1965 (Newes-Adeyi, Chen, Williams & Faden, 2005; SAMHSA, 2003). People who reported starting to drink before the age of 15 were also four times more likely to report meeting the criteria for alcohol dependence at some point in their lives (Grant & Dawson, 2003). In fact, new research shows that the serious drinking problems (including what is called alcoholism) typically associated with middle age, actually begin to appear much earlier, during young adulthood and even during adolescence.

As children move from adolescence to young adulthood, they encounter dramatic physical, emotional, and lifestyle changes. Developmental transitions, such as puberty and increasing independence, have been associated with alcohol use. So in a sense, just being an adolescent may be a key risk factor not only for starting to drink, but also for drinking dangerously (Newes-Adeyi, *et al.*, 2005).

2.8.1. Risk-Taking

Research shows that the brain keeps developing well into the twenties, during which time it continues to establish important communication connections and further refines its function. Scientists believe that this lengthy developmental period may help explain some of the behaviour which is characteristic of adolescence; for example, their tendency to seek out new and potentially dangerous situations. For some teens, thrill-seeking might include experimenting with alcohol. Developmental changes also offer a possible physiological explanation for why teens act so impulsively, often not recognising that their actions, such as drinking, have consequences (Grant & Dawson, 1998).

2.8.2. Expectancies

How people view alcohol and its effects also influences their drinking behaviour, including whether they begin to drink and how much they drink. An adolescent who expects drinking to be a pleasurable experience is more likely to drink than one who does not. An important area of alcohol research is focusing on how expectancy influences drinking patterns from childhood through adolescence and into young adulthood (Lang & Strizke, 1993; Smith, Goldman, Greenbaum & Christiansen, 1995; Zucker, Kincaid, Fitzgerald & Bingham, 1995; Dunn & Goldman, 1996). Beliefs about alcohol are established very early in life, even before the child begins elementary school (Noll, Zucker & Greenberg, 1990). Before age 9, children generally view alcohol negatively and see drinking as bad, with adverse effects. By about age 13, however, their expectancies shift, becoming more positive (Dunn & Goldman, 1996; Dunn & Goldman, 1998). As would be expected, adolescents who drink the most, also place the greatest emphasis on the positive and arousing effects of alcohol.

2.8.3. Sensitivity and tolerance to alcohol

Differences between the adult brain and the brain of the maturing adolescent may also help to explain why many young drinkers are able to consume much larger amounts of alcohol than adults (Johnston, O'Malley & Bachman, 2003) before experiencing the negative consequences of drinking, such as drowsiness, lack of coordination, and withdrawal/hangover effects (Spear, 2000; Spear & Varlinskaya, 2005). This unusual tolerance may help to explain the high rates of binge drinking among young adults. At the same time, adolescents appear to be particularly sensitive to the positive effects of drinking, such as feeling more at ease in social situations. Young people may drink more than adults because of these positive social experiences (Spear, 2000; Spear & Varlinskaya, 2005).

2.8.4. Personality characteristics and psychiatric comorbidity

Children who begin to drink at a very early age (before age 12) often share similar personality characteristics that may make them more likely to start drinking. Young people who are disruptive, hyperactive and aggressive are often referred to as having conduct problems or being

antisocial. Those who are depressed, withdrawn, or anxious may be at the greatest risk of developing alcohol problems (Zucker, Wong, Puttler & Fitzgerald, 2003). Other behaviour problems associated with alcohol use include rebelliousness (Brook, Whiteman, Finch & Cohen, 1995), difficulty avoiding harm or harmful situations (Jones & Heaven, 1998), and a host of other traits seen in young people who act without regard for rules or the feelings of others. This is known as dis-inhibition (Moss & Kirisci, 1995; Colder & Chassin, 1997; Colder & O'Connor, 2002).

2.8.5. Hereditary factors

A strong family history of alcohol-related disorders indicates a vulnerability to alcohol-use disorder. About 40-60 % of the risk is explained by genetic factors and the remainder is a combination of genetic factors and the environment (Rodseth, 2012). Some of the behavioural and physiological factors that converge to increase or decrease a person's risk of developing alcohol problems, including tolerance to alcohol's effects, may be directly linked to genetics. For example, being a child of an alcoholic or having several alcoholic family members places a person at greater risk of developing alcohol problems. Children of alcoholics (COAs) are between four and ten times more likely to become alcoholics themselves than are children who have no close relatives with alcoholism (Russell, 1990). COAs also are more likely to begin drinking at a young age (Donovan, 2004) and to progress to developing drinking problems more quickly (Grant & Dawson, 1998).

Research shows that COAs may have subtle brain differences, which could be markers for developing later alcohol problems (Tapert & Schweinsburg, 2005). Using high-tech brain-imaging techniques, scientists have found that COAs have a distinctive feature in one brainwave pattern (called a P300 response) that could be a marker for later alcoholism risk (Hill & Steinhauer, 1993).

Some studies suggest that these brain differences may be particularly evident in people who also have certain behavioural traits, such as signs of conduct disorder, antisocial personality disorder,

sensation-seeking, or poor impulse control (Tarter, Altermen & Edwards, 1985; Schuckit & Smith, 1997; Schuckit, 1998; Bauer & Hesselbrock, 1999a; Bauer & Hesselbrock, 1999b). Studying how the brain's structure and function translates to behaviour will help researchers to better understand how pre-drinking risk factors shape later alcohol use; for example, does a person who is depressed drink to alleviate his or her depression, or does drinking lead to changes in his brain that result in feelings of depression?

Studies have confirmed that there is a genetic component to a drinking behaviour and drinking problems, in addition to the undeniably important influences of the environment (Brook, *et al.*, 1995; Parry & Bennets, 1998; Botvin & Kantor, 2000). Behaviour such as alcohol consumption cannot be totally understood on the basis of genes or environment alone. Instead, it must be seen as the product of the interaction between a variety of genetic and environmental influences. The individual is more or less predisposed to heavy drinking, or to a particular alcohol-related problem or to become depend upon alcohol. This level of predisposition determines the risk or the probability of being a heavy drinker or of suffering from a particular drinking related problem (Edwards, *et al.*, 1997; Parry, *et al.*, 2004).

2.8.6. Environmental Aspects

Drinking behaviour reflects a complex interplay between inherited and environmental factors. The implications of environmental factors in causing alcohol drinking are only beginning to be explored in adolescence (Rose, Dick, Vicken & Kaprio, 2001). What influences drinking at one age may not have the same impact at another. As Rose, Dick, Viken & Kaprio (2001) show, genetic factors appear to have more influence on adolescent drinking behaviour in late adolescence than in mid-adolescence.

Environmental factors, such as the influence of parents and peers, also play a role in alcohol use (Halpern-Felsher & Biehl, 2004). For example, parents who drink more and who view drinking favourably may have children who drink more, and an adolescent girl with an older or adult boyfriend is more likely to use alcohol and other drugs and to engage in delinquent behaviour.

Researchers have examined other environmental influences as well, such as the impact of the media (Saffer, 1996; Parry, 2002). Today, alcohol is widely available and aggressively promoted through television, radio, billboards, and the Internet. Researchers have studied how young people react to these advertisements (Tibbs & Parry, 1994; Parry, 2002). In a study of learners in Grades 3, 6 and 9, those who found alcohol advertisements desirable were more likely to view drinking positively and to want to purchase products with alcohol logos (Austin & Knaus, 2000). Research results are inconclusive, however, on whether these positive views of alcohol actually lead to underage drinking.

2.8.7. Political and economic factors

Some political and economic circumstances, like reducing the real price of alcohol, tend to increase the overall consumption of alcohol by the population (Parry, 2005). Similarly, measures which make alcohol more readily available by reducing restrictions on its supply also tend to increase consumption. Thus, major influences upon per capita consumption in a population include factors amenable to political manipulation, such as taxation, licensing laws and trade agreements. Manipulation of such influences can have an enormous impact on the level of alcohol consumption of a population. Conversely, failure to utilize such controls can allow alcohol consumption to escalate and related problems to reach epidemic proportions (Edwards, *et al*., 1997; Parry, 2005).

2.8.8. Socio-cultural factors

The availability of alcohol, affordability of alcohol and acceptability of alcohol plays an important role in causing drinking problems. These factors are determined to a large degree by social and cultural values. However, these influences operate at various levels; for example, national and racial, religious, occupational and family influences may all play a part. Some cultures and societies, for example Islamic culture, promote total abstinence. At the other extreme are permissive culture;, for example Mediterranean countries, where drinking is actively endorsed. Such countries usually have high rates of morbidity attributable to alcoholic liver diseases (Edwards, *et al*., 1997; Parry & Bennets, 1998).

Between these extremes there may be a mixture of cultural influences encouraging or discouraging drinking; for example, in Jewish societies drinking is generally socially accepted, but strong negative connotations are attached to deviant drinking behaviour such as public drunkenness.

Culture can influence the pattern and context as well as the amount of alcohol consumption. Patterns of alcohol consumption may, in turn, be important determinants of a drinking problem. In France, habitual drinking of wine with meals is associated with a relatively high, but constant per capita consumption, which predisposes one towards chronic medical complications such cirrhosis and certain cancers (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2006).

Culture may also influence the way in which people behave when intoxicated. Family culture may also be an important influence on drinking. In addition to genetic influences, it seems likely that children will inherit heavy drinking patterns by virtue of learning this behaviour and any associated values and beliefs from their parents. However, this does not necessarily mean that all heavy-drinking parents produce heavy-drinking children (Edwards, *et al*., 1997).

2.8.9. Stress and life events

Major life events and everyday hassles both appear to increase the amounts that people drink. This may be explained on the basis that alcohol relieves anxiety and is thus used as a means of coping with stress. An increased frequency of life events usually precedes the onset of alcohol misuse (Sayette, 1999; Arch, Craske, Stein, Sherbourne & Roy-Byrne, 2006). However, evidence from research conducted is not consistent and heavy drinking tends to cause further stress in the form of the problems such as divorce, unemployment and ill health. There is also evidence that alcohol can exacerbate anxiety rather than relieve it (Edwards, *et al*., 1997; Arch, *et al*., 2006; Jané-Llopis & Matsytsina, 2006).

Depression and anxiety is consistently predicted among pregnant women who continue to use alcohol antenatally (Homish, Cornelius, Richardson & Day, 2004). Depression is argued by some as a justification for both initiating and maintaining alcohol and substance use in pregnancy. In women with alcohol and/or substance use disorders, perceived stress is associated with increased use and increased risk of relapse. In South Africa pregnant women tend to have high levels of perceived stress and pose a significant and public health problem (Vythilingum, Roos, Faure, Geerts & Stein, 2013).

2.8.10. Contextual drinking problems

Drinking is a perfect example of a contextual problem. Relatively modest alcohol consumption, which would cause no social, psychological or medical problems in most other contexts, may be the cause of serious injury or death when the drinker is also the driver of a car. Similar considerations also apply to other forms of transportation and safety-sensitive environments (Edwards, *et al*., 1997).

2.9. FACTORS THAT INFLUENCE ALCOHOL CONSUMPTION

Several factors contribute to an individual's decision to drink or not to drink alcohol on any given occasion. These factors are discussed below.

The individual is usually influenced to drink alcohol by the immediate environment, such as the nature of the occasion, the individual's special desire, physical and mental state and also the degree of peer pressure. In addition, socio-cultural influences and historical and contemporary factors contribute to an individual's attitudes, beliefs and values regarding the use of alcohol. These may include religious, ethnic and family customs (Fishman, 1992; Parry & Bennets, 1998).

However, compared with the circumstances of the immediate situation, socio-cultural influences have less effect on an individual's decision to drink. In many cases, persons with particular

beliefs and expectations about drinking come into contact with people who have different attitudes to alcohol use. Thus, an individual may be placed in a situation that demands social drinking at a level that he or she would previously have considered to be alcohol misuse (Fishman, 1992).

Factors in alcohol misuse are likely to include: peer pressure (particularly among young persons) and communal drinking among adults; availability, particularly in more disadvantaged communities; the falling price of certain kinds of alcohol products (e.g. malt beer and brandy) relative to the consumer price index; chemical dependence on alcohol; poor social conditions and boredom; a lack of social controls to deal with those misusing substances; and societal attitudes in general (Rocha-Silva, Miranda & Erasmus, 1996; Parry & Bennetts, 1998).

Ghuman, Meyer-Weitz and Knight, (2012) found in their study that 54 % of students had used alcohol before, 14,5% had had their first drink before the age of 13, and 32% engaged in binge drinking. Students, who were more likely to have used alcohol, were older, male, white and had often seen their fathers drunk, had friends who frequently drank alcohol. With regard to availability and access, for example, there are currently almost 23 000 licensed liquor outlets with an estimated 150 000 to 200 000 unlicensed outlets, yielding approximately one liquor outlet for every 190 persons in South Africa (Parry & Bennetts, 1998). Research has shown that school-going youth find it easy to purchase alcohol from bottle stores, supermarkets, bars and shebeens (Tibbs, Parry, Stretch & Brice, 1994).

2.10. CONSEQUENCES OF ALCOHOL CONSUMPTION

According to the Constitution of the WHO, health is "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity". This definition, therefore, takes into account not just physical and mental harms, but also social harms, both for the drinker and for others.

Alcohol affects virtually every organ system in the body (Schukit, 2009). A few examples of harm to others are included in the analysis of alcohol's contribution to the global burden of disease. These include perinatal conditions attributable to the mother's drinking during pregnancy, and injuries, particularly assault injuries. However, the scope of alcohol-related social harm and of harm to others stretches well beyond these items. Thus, a recent study in Australia (Laslett, *et al*., 2011) identified the following harms to others associated with drinking:

- Harms identified in records—these included deaths and hospitalizations (e.g., attributed to traffic injuries because of driving under the influence), child abuse or negligence cases involving a caregiver's drinking, and domestic and other assaults;
- Harms based on survey reports — these included negative effects on co-workers, household members, other relatives and friends, strangers, and on the community as a whole.

These effects were quite prevalent. Thus, the researchers estimated that within one year, more than 350 deaths were attributed to drinking by others, and more than 10 million Australians (or 70% of all adults) were negatively affected by a stranger's drinking (Laslett, *et al*., 2011).

2.10.1. Health impacts of alcohol

In 2000, alcohol was responsible for 4% of the global burden of disease, which is more or less equal to the damage caused to society by tobacco use (4.1%). Alcohol was estimated to have caused 1.8 million deaths or 3.2% of all deaths globally. Contribution to the global burden of disease was considerably higher in developed countries (9.2%) than in developing countries, partly owing to the greater consumption of alcohol in these countries and partly owing to the high burden from other diseases in developing countries (such as AIDS, Malaria, childhood illnesses, etc.). Alcohol consumption contributes to disease, injury, disability and premature death more than any other risk factor in developing countries with low mortality rates. In high mortality regions including Afro Region E, the GBD was calculated to be 1.6%. For South Africa the estimated burden owing to alcohol (death and disability) has been calculated to be 7.0%, 10.5% for males and 3.1% for females (Schneider, *et al*., 2007)

2.10.2. Direct biological Impacts

Schneider, *et al*., (2007) argue that both acute intoxication and chronic long-term excessive drinking may have adverse effects on the brain, central nervous and muscular system, liver, heart (though there are also some positive effects for certain groups of people), blood cells, gastrointestinal system, respiratory system, reproductive system, as well as the immune system. Alcohol use contributes to more than 60 diseases and conditions. The conditions mentioned below are some of the most important (the prevalence rates of most of these diseases in South Africa are generally not known and, unless specifically stated, rates refer to international figures).

2.10.3. Alcoholic liver disease

Alcohol is absorbed quickly into the blood system, passes through organs where it oxidizes slowly and can cause damage. The most common organ affected is the liver. Mortality studies have consistently demonstrated that heavy drinkers die from liver disease at a much higher rate than the general population. Types of alcoholic liver disease include alcoholic fatty liver (prevalent in about 20% of heavy drinkers); alcoholic hepatitis; and alcohol cirrhosis (about 10-15% of people with alcohol dependence develop cirrhosis). Alcohol also increases the risk of developing liver cancer (Schneider, *et al*., 2007; Reuben, 2007).

Alcohol hepatitis is characterized by the inflammation (necrosis) of the liver, jaundice and abdominal pain. Scar tissue may replace healthy tissue, leading to a process of “fibrosis”. The condition is reversible with abstinence. Alcohol cirrhosis is the most advanced form of liver disease. The liver is characterized by extensive fibrosis that stiffens blood vessels and distorts the internal structure of the liver. This damage results in severe functional impairment and may result in secondary malfunction of other organs, including the brain and kidneys. The amount of alcohol consumed and the duration of that consumption are closely associated with cirrhosis. More importantly, as consumption increases, the risk of cirrhosis is greater for women than for men. Moreover, consumption of alcohol without food results in higher risk than with food. Cirrhosis can stabilize with abstinence. While alcoholic fatty liver, alcohol hepatitis and cirrhosis

have been considered to be sequentially related, (that is, progressing in this order) this is not always the case. Some cirrhosis develops without hepatitis and hepatitis may have a sudden onset and a rapid course resulting in death even before cirrhosis can develop (Schneider, *et al*., 2007; Reuben, 2007).

2.10.4. Effects on the heart

Alcohol can be beneficial or harmful to the cardiovascular system depending on the amounts consumed and the characteristics of the consumer. Low to moderate consumption has been shown to have coronary benefits for people who are 40 years and older. However, according to the WHO (2005):

> In some industrialized countries where the condition is common and injuries and violence are rare, alcohol consumption may prevent about as many deaths as it causes in some segments of the population. The patterns of drinking in many countries, however, often with heavy episodic consumption, are likely to increase rather than decrease the occurrence of coronary heart disease.

Questions have also been raised regarding the transferability of these findings of the benefits to developing countries. As coronary heart disease is associated with diet, lifestyle and age, and given that the diet of many traditional developing countries is relatively low in fat and high in fibre (a factor that is often given as one of the reasons for the comparatively low incidence of heart disease in developing countries), the findings of the protective effects may not be applicable. Moreover, even if moderate drinking is protective, heavy alcohol consumption could damage the cardiovascular system, causing heart muscle disorders, irregular heart rhythms, high blood pressure and strokes (Schneider, *et al*., 2007).

2.10.5. Effects on blood cells

Alcohol has numerous adverse effects on blood cells and their functions. Heavy drinking can cause generalized suppression of blood cell production and the production of abnormal blood cell precursors that cannot manufacture cells. There is evidence that blood pressure increases

with increased drinking. A study in India found alcohol consumption to be a significant risk factor for hypertension. A meta-analysis found that 11% of cases of hypertension in males and 6% in females could be directly causally attributed to alcohol (Schneider, *et al*., 2007).

2.10.6. Gastrointestinal and respiratory systems

Alcohol can interfere with the structure and function of the gastrointestinal tract. For example, alcohol can impair the muscles separating the oesophagus from the stomach increasing the risk of cancer. Alcohol interferes with the muscle movement of the small and large intestines and the absorption of nutrients into the body (Schneider, *et al*., 2007).

Epidemiological research in developing countries has found a causal link between heavy alcohol consumption and pancreatitis. Eighty per cent of cases of chronic pancreatitis were attributable to alcohol.

A meta-analysis of more than 200 studies found that alcohol strongly increased the risks of various types of cancers (oral cavity, pharynx, oesophagus and larynx) and also revealed statistically significant increases in risk for cancers such as stomach, colon, rectum, liver, breast and ovaries (Schneider, *et al*., 2007).

2.10.7. Reproductive system

In men, alcohol can result in loss of libido, reduced potency, shrinking in size of testes and penis, reduced or absent sperm formation and infertility. In women, alcohol has been found to result in menstrual irregularities, shrinking of breast and external genitalia, as well as and sexual difficulties. It also affects the female reproductive capacity (Schneider, *et al*., 2007).

2.10.8. Immune system

Alcohol consumption affects various components of the immune system. Both chronic and acute alcohol consumption disrupts the immune system functions (Szabo & Mandrekar, 2009). It is evident from animal and in-vitro studies that alcohol impairs various aspects of the immune

system and, particularly, increases the susceptibility to HIV infection. It may also interfere with adherence to anti-retroviral treatment. Some evidence also suggests that alcohol may lead to accelerated progression of the disease (Schneider, *et al*., 2007).

2.10.9. Effects on the brain and central nervous system

Alcohol directly affects brain function in a number of ways. At a behavioural level, neurological disorders resulting from alcohol can result in changes in emotions, personality, impaired perception, learning and memory. The detrimental effects of alcohol on the brain may be similar to Alzheimer's disease. It has been established from autopsies that the brains of people with severe alcohol dependency are smaller, lighter and exhibit greater atrophy than those of non-alcoholics. Neuropsychological studies of people with chronic alcohol dependence have reported cognitive deficits including problems with problem solving, organising, planning and abstraction (frontal lobe functions); short- and long-term memory loss; and 14 verbal fluency, learning, and visio-spacial perceptions. Impaired co-ordination and balance have also been found (Schneider, *et al*., 2007).

Alcohol influences several neurotransmitter systems, including opiate receptors, gamma-aminobutyric acid (GABA), glutamate, serotonin and dopamine. The increase in opiate levels may explain the euphoric effects of alcohol, while its effects on GABA give it anxiolytic and sedative properties, and induce muscle relaxation and the feeling of intoxication. Alcohol inhibits glutamate receptors and long-term ingestion results in the synthesis of glutamate receptors leading to central nervous system excitability when alcohol is withdrawn (Schukit, 2009). The effects of dopamine in the ventral tegmental area may contribute to the rewarding effect of drinking and the craving as well as behavioural dis-inhibition during drinking (Rodseth, 2012).

2.10.10. Co-morbidity

Psychiatric co-morbidity is common in individuals with a history of alcohol abuse and dependence. Schizophrenia, bi-polar disorder, depression, attention deficit disorder, anxiety disorder and eating disorders have all been associated with the abuse of alcohol, though it is not always clear which condition preceded the other (Schneider, *et al*., 2007).

2.10.11. Depression

According to the WHO Global Status Report on Alcohol (WHO, 2004), there is evidence to assume that alcohol has a causal role in depression. Not only do alcohol dependence and major depression co-occur disproportionately, but also higher volumes of alcohol consumption are associated with more symptoms of depression (Graham, Frost-Pineda & Gold, 2007). While it has often been postulated that people suffering from depression "self-medicate" with alcohol (no doubt in some cases this is true), the question of which precedes the other is not yet fully resolved and/or whether there may be a third variable such as neurobiological mechanisms or genetic predisposition, which causes both to occur (Arch, *et al*., 2006). Nonetheless, evidence of a causal link from alcohol to depression is growing. Reversibility (remission during abstinence) is a key indicator for causal effect of alcohol dependence on depressive disorder and there is good evidence that abstinence substantially removes depressive disorders within a short time frame (Schneider, *et al*., 2007).

2.10.12. Alcohol dependence

The ICD-10 defines alcohol dependence syndrome as being a cluster of physiological, behavioural and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value. A central descriptive characteristic is the desire (often strong, sometimes overpowering) or sense of compulsion to take alcohol. In the WHO Global Status Report on Alcohol (2004), of 35 countries reporting levels of alcohol dependence amongst the adult population, South Africa had the highest reported figure, that is, 27.8% of males and 9.9% of females. This should, however, be interpreted with great caution, for example, as instruments and timeframes used were not standardized.

Alcohol is consistently the substance of abuse in people receiving help for substance related problems in South Africa. In the first half of 2005, between 47% (Cape Town) and 74% (Durban) of patients receiving treatment had alcohol as a primary or secondary drug of abuse (Parry, 2005). Although the number of people seeking treatment for alcohol abuse seems to be

decreasing and the number seeking treatment for the abuse of other drugs seems to be increasing, alcohol abuse remains the main reason why people seek treatment. The number of patients older than 20 seeking treatment for alcohol problems is substantially higher than that for younger patients.

2.10.13. Non-natural mortality and morbidity

Unintentional and intentional injuries are responsible for up to 10% of the global burden of disease. Internationally, alcohol use accounts for 13% of DALYs lost due to 15 unintentional injuries and 15% due to intentional injuries (Rehm, *et al.*, 2003). The amount of alcohol consumed is a major determinant of both risk and severity of injury. Alcohol plays a major role in traffic and other accidents, as well as homicides, interpersonal injury and suicide. High rates of alcohol have been found in both the "perpetrator" and the "victim". The largest number of non-natural deaths is South Africa is due to violence (48%) followed by transport fatalities (30%). Both violence and transport deaths are closely linked with alcohol (Plüddemann, *et al.*, 2004; Matzopoulos, 2005; Schneider, *et al.*, 2007).

2.10.14. Alcohol-related mortality

Data from the Non-Natural Mortality Surveillance System (NNMSS) in 2002 indicated that 46% of non-natural deaths in South Africa involved persons with blood alcohol concentrations (BACs) greater than or equal to 0.05g/100 ml (Matzopoulos, Seedat & Cassim, 2003). NNMSS data for 2003 indicated that for all causes of death, 49% had positive BACs and the mean BAC overall was 0.18g/100ml (Harris, Sukhai & Matzopoulos, 2004). Levels of BAC positivity were high for homicides (51% positive, with a mean BAC of 0.17g/100ml), suicides (35% positive, with a mean BAC of 0.15g/100ml) and transport related deaths (53.3%) (Matzopoulos, 2005).

The majority of transport-related deaths in South Africa are of pedestrians (38.8%), followed by unspecified (21%), driver of a motor vehicle (17.7%) and passenger (12.2%) of deaths. While in all categories of transport-related death, high alcohol blood levels was prevalent, this was highest amongst pedestrians (61%). This means that, by far, the largest number of transport-related

deaths in South Africa is of intoxicated pedestrians. Despite this, campaigns almost always focus on drinking and driving and not on drinking and walking!

2.10.15. Alcohol-related trauma

In 2001, 39% of trauma patients in Cape Town, Durban and Port Elizabeth had breath alcohol concentrations (BrACs) greater than or equal to 0.05g/100 ml (Plüddemann, *et al.*, 2004). Levels of alcohol positivity were particularly high for persons injured as a result of violence (73% for Port Elizabeth, 61% for Cape Town and 43% for Durban). In data gathered from a wide variety of facilities in the Cape Metropol, Peden reported that 70% of domestic violence cases were alcohol-related (Peden, 1995). From research conducted by the Department of Transport, the national daily average of persons driving under the influence of alcohol was found to have increased from 1.8% in 2002 to 2.1% in 2003 (Arrive Alive, 2005).

The differences between perpetrator and victim are not always clear. For example, victims may include people involved in fights who happened to be the ones injured or killed, or the drunk driver of a motor vehicle injured or killed in an accident.

2.11. SOCIAL AND PSYCHOLOGICAL IMPACTS

Alcohol consumption can have both social and psychological impacts even though these are more difficult to measure than the physical health impacts. However, one can look at substantive impacts on crime, patterns of interpersonal violence, and family and work problems.

2.11.1. Alcohol and crime

A national study of prisoners and parolees in 1996 found that just under half had taken alcohol or other drugs just prior to the crime for which they were incarcerated (Rocha-Silva & Stahmer, 1996). Drinking was especially linked to rape and housebreaking offences. Subsequent research in Cape Town, Durban and Johannesburg in three phases between 1999 and 2000 (Parry, *et al.*,

2004) found that, overall, 15% of the arrestees were under the influence of alcohol at the time the alleged offence took place. Regarding violent offences, arrestees indicated that they were under the influence of alcohol for 25% of the weapons related offences, 22% of rapes, 17% of murders, 14% of assault cases and 10% of robberies. Levels of alcohol-related crimes were particularly high for family violence offences at 49% (Seedat, van Niekerk, Jewes, Suffla & Ratele, 2009).

Arrestees also indicated that they were often under the influence of alcohol in cases involving property offences. For example, 22% of cases involved housebreaking and 12% of cases involved the theft of a motor vehicle. When asked why they had consumed alcohol or other drugs before committing crimes, many arrestees indicated that they consumed these substances in order to give them courage to commit the crimes (Parry, *et al*., 2004).

2.11.2. Interpersonal violence

Of the approximately 2.1 million cases of crime reported in South Africa between April 2007 and March 2008, "contact" crimes (murder, attempted murder, and rape, assault with intent to inflict grievous bodily harm, common assault, indecent assault, aggravated robbery and other robbery) accounted for 33% of all crimes. While the incidence of all contact crime showed a decrease for 2007/2008 as compared to the incidence for 2006/2007, the incidence of violent crime remains unacceptably high. For example, the murder rate per 100 000 for South Africa is 39 000, ranking 7th highest out of 11 countries (Seedat, *et al*., 2009).

Numerous studies have found an association between alcohol consumption and aggressive behaviour though not everyone who consumes alcohol gets aggressive. People with anti-social personality disorders appear to be particularly susceptible to alcohol-related aggression. People who have previously been violent under the influence of alcohol are the most likely to become aggressive when drinking again. Internationally, alcohol has been associated with numerous acts of interpersonal violence which include physical and sexual abuse, emotional and psychological abuse and neglect (Seedat, *et al*., 2009; Setlalentoa, *et al*., 2010).

Various categories of criminal behaviour have been identified as having links to drinking and driving, homicide, domestic violence, other assaults, sexual violence and child abuse. A strong link between alcohol use, crime and violence has been established by meta-analysis, with between a quarter and half of homicides or purposeful injury having shown to be attributed directly to alcohol use (English, Holman, Milne, Hulse & Winter, 1995; Single, Robson, Xie & Rehm, 1998). McClelland and Teplin, (2001) directly observed 2365 police-citizen encounters in the USA. Overall, 34% of these encounters were judged to be alcohol-involved, with the following percentages reported: violent crime and sexual assault (43%), spousal assault (43%), robbery (39%), public order/vandalism (46%) and other non-violent encounters (23%).

2.11.3. Family and work problems

Drinking can impair one's functioning as a parent, as a spouse and as a contributor to the running of a household (Mulaudzi, 2003). Drinking requires time (often spent with drinking colleagues) and this competes with time needed to carry on family life (e.g. time spent with children, doing household chores etc.).

Drinking money often takes precedence over other household needs, often leaving the family unable to afford even basic goods and services. Drinking leads to a spiral of poverty in which the drinking behaviour inhibits income capacity (through absenteeism, lack of motivation, poor quality of work, loosing employment) while any income earned is then spent on drink – at times to drown sorrows related to not having work or only having a poorly paid job. A study in Delhi, India, compared families where the husband drank at least three times a week to those where the husband drank only once a month. In the first group 24% of household income was spent on alcohol compared with 2% in the other families. The family with the drinker had significantly more debts (60% vs. 42%) and these debts were twice as large (Mulaudzi, 2003; Mothiba & Malema, 2009).

While continuing patterns of drinking threaten family subsistence, events that take place when a family member is intoxicated can also have lasting consequences – mainly through injuries and

family violence. The psychological toll on the family is often great. For example, in interviews with family members of heavy drinkers in Mexico, 73% reported feelings of anxiety, fear and depression, 62% reported physical or verbal aggression, and 31% reported family disintegration. For many mothers, the inability of the fathers to bring in adequate incomes to feed and clothe their children owing to their drinking habits, leads to depression in the mothers (Mulaudzi, 2003; Mothiba & Malema, 2009).

Violence against women and children often has severe psychological consequences for the victims (WHO, 2001). Alcohol can impair work performance through decreased efficiency and it can lead to poor workplace safety. For example, intoxication can result in errors of judgement, accident proneness and putting the lives of others at risk. Alcohol misuse also results in greater absenteeism from work and increases the risk of dismissal from work. In Costa Rica it was found that 30% of absenteeism and workplace accidents were caused by alcohol dependence. In India 15-20% of absenteeism and 40% of accidents were due to alcohol. Among Grades 8 and 11 learners in Cape Town, a significant association was found between past month use of alcohol and the number of days absent from school and repeating a grade. The odds of repeating a grade were 60% higher for learners who consumed alcohol. Whether this relationship was causal, or occurred through another factor was not established (Peltzer, Cherian & Cherian, 1999b).

2.12. SPECIAL AREAS OF CONCERN IN SOUTH AFRICA

Two areas regarding alcohol in South Africa need special mention. These are the Foetal Alcohol Syndrome (FAS) and HIV/AIDS.

2.12.1. Foetal Alcohol Syndrome (FAS)

Heavy alcohol intake during pregnancy, usually in a binge drinking pattern, occurs in over 20% of women in the Western Cape (Croxford & Viljoen, 1999). Drinking during pregnancy remains

a problem despite considerable media attention efforts by the national government to limit alcohol harm and isolated initiatives to increase universal and other preventive activities in these provinces (Chersich, Urban, Olivier, Davies, Chetty & Viljoen, 2012). Drinking alcohol during pregnancy may lead to damage to the foetus. This could be in the form of Foetal Alcohol Effects or full-blown Foetal Alcohol Syndrome (FAS). FAS is characterized primarily by damage to the brain and the central nervous system, which results in hyperactivity, attention problems, learning disabilities (e.g. problems of memory, abstract reasoning), lack of judgement and fits. Other organs such as the heart and kidneys, as well as growth may be affected. There is no cure for FAS, and most FAS children are unable to cope with normal schooling (May, Brooke, Gossage, Croxford, Adnams, Jones, Robinson & Viljoen, 2000). Moreover, many FAS children are part of "alcoholic families" who are unable to give them the special care and attention they need. The result is that many FAS children drop out of school early, are not easily employable and are susceptible to gangs, crime and peer-pressure (Croxford & Viljoen, 1999; Viljoen, Craig, Hymbaugh, Boyle & Blount, 2003).

South Africa has the highest reported rate of FAS in the world. (It must be noted though that poorer countries have never conducted epidemiological research into FAS and thus rates in these countries are not known). Other studies have also found that FAS is higher with higher levels of FAS in the Western and Northern Cape than anywhere in the world (Olivier, Urban, Chersich, Temmerman & Olivier, 2013). In poorer areas of the Western Cape the prevalence of FAS among Grade 1 learners was found to be 46 per 1000 in 1997 and this increased to 75 per 1000 in 1999. In the Northern Cape rates of 103 and 75 per thousand were found in different areas. Prevalence in three poor areas in Gauteng found rates of 12, 22 and 37 per 1000. While the Gauteng rates were lower than those of areas in the Cape, they are still far higher than even the most at risk communities in developed countries, such as the urban poor or native settlement areas in the USA. In studies in the USA and France, rates of 0,5 and 3,0 per 1000 were found. Mothers who drink alcohol in a binge fashion while pregnant and exceed 5 drinks per week per occasion, that is, more than 90mls of absolute alcohol, are especially at risk for FAS. Thus, one heavy bout of drinking may be enough to cause FAS (May, 1995).

2.12.2. Risky sexual behaviour

The misuse of alcohol is increasingly being recognised as a key determinant of risky sexual behaviour, and, consequently, an indirect contributor to HIV transmission in sub-Saharan countries. According to Morojele, *et al*. (2004), numerous cross-sectional investigations conducted among adults in this region have shown consistently that alcohol use is associated with HIV infection as well as with risky sexual behaviours, such as having multiple sexual partners (Mnyika, Klepp, Kvale & Ole-Kingori, 1996; Mbulaiteye, Ruberantwari, Nakiyingi, Carpenter, Kamali & Whitworth, 2000; Campbell, Williams & Gilgen, 2002; Hargreaves, James, Morrison, Chege, Rutenberg, Kahinde, Hayes & Buve, 2002; Fritz, Woelk, Bassett, McFarland, Tobaiwa & Stall, 2002; Clift & Barrett, 2003, Mnyika, Klepp, Kvale & Ole- Kingori, 1997; Trigg, Peterson & Meekers, 1997).

Three different but related explanations are proposed to account for the relationship between alcohol use and risky sexual behaviour. First is the argument that alcohol consumption may represent other behavioural, lifestyle, contextual and/or personality factors which are associated with engagement in high-risk sexual behaviour (Hargreaves, *et al*., 2002). Secondly, ethanol acts on the central nervous system, reduces inhibitions, and, consequently, increases people's likelihood of engaging in risky sexual and other behaviours. Thirdly, people's alcohol expectancies, that is, their expectations about how alcohol will influence their behaviour, can also influence their actual behaviour (Brown, Christiansen & Goldman, 1987).

In both qualitative and quantitative studies conducted by Morojele, *et al*. (2004) in a black township in South Africa among adults between the ages of 22 and 45 it was found that there were strong relationships between various measures of alcohol use and risky sexual behaviour. In this quantitative study, two main types of effects that alcohol consumption may have on sexual behaviour were identified, that is, drinking seems to increase the appeal of sexual episodes and it reduces people's control with respect to sexual encounters. The variables which were found to be associated with the reported increased sexual appeal owing to drinking were being young, not being married, being employed, drinking more, being a problem drinker, having more sexual partners and engaging in regretted sex (Mbulaiteye, *et al.,* 2000; Kalichman & Simbayi, 2004).

This profile seems to suggest that inexperienced, younger, heavier drinking adults are at greatest risk of having alcohol-related risky sexual encounters. Those who reported being less able to have control over their condom use after drinking were less likely to have used condoms in their lifetimes. It seems that those who were usually not inclined to use condoms might have become even less inclined to use them after drinking. However, other individuals who were most strongly committed to condom use became even more vigilant when drinking (Kalichman & Simbayi, 2004).

Men appear to be at greater risk of engagement in alcohol use-related risky sexual behaviour than women. Men are also more likely to report that they engage in sex under the influence of alcohol, that drinking increases their desire to have sex with a casual partner and that drinking worsens their ability to resist unwanted sexual advances (Kalichman & Simbayi, 2004).

2.13. SCREENING FOR RISKY DRINKING

Screening for risky drinking should be routine in primary health care clinic practice in order to prevent alcohol-related problems before they become disabling and more difficult to manage. Early identification of alcohol-related problems is important because these problems are prevalent, pose serious health risks to patients and their families, and are amenable to intervention. Brief intervention may help patients to change their behaviour. Recording the history of the patient's drinking behaviour in order to identify patterns of alcohol-related difficulties with physical and mental health, family life, legal authorities and employment, can be the most effective tool for screening (Burge & Schneider, 1999).

Research indicates that after personal reflection about the negative consequences of alcohol misuse, many drinkers reduce their drinking without formal treatment. Health care providers in primary health care clinic settings can help prevent the serious effects of alcohol-related problems by stimulating such reflection and moving patients toward healthier lifestyles (Burge & Schneider, 1999).

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

Most problem drinkers are employed, employable, or in families, indicating that the scope of the problem extends far beyond those who meet the formal diagnostic criteria. Therefore, in a primary health care clinic setting, one first identifies and then helps the patient understand and acknowledge the consequences of drinking, the presence of a problem, and the need for intervention.

Screening questionnaires

A variety of screening procedures that are intended to aid in the detection of people with harmful and hazardous alcohol consumption in clinical and primary health care clinic settings have been devised e.g. the 25-item MAST and CAGE test (WHO, 1996; Edwards, *et al.*, 1997; Cherpitel, 1997). These tests generally tend to pick up the more extreme rather than the easy cases. The MAST test, for instance, has among its items delirium tremens and hospital admission for drinking. However, the tests show remarkably good sensitivity and specificity for excessive drinking and alcoholism (Edwards, *et al.*, 1997). Thus, such instruments are of value for routine screening in a hospital setting. Questionnaires may be of value in a primary health care clinic. However, these tests, in general, have found more application as research tools than in the front line medical and social setting where paper and pencil tests provide no substitutes for vigilance, sympathetic questioning and the real skills needed for identifying drinking problems of all degrees, types and concealment (Edwards, *et al.*, 1997).

The Alcohol Use Disorder Identification Test (AUDIT) was developed by an international group of investigators at the request of the World Health Organization. Its aim is to identify problem

drinkers in primary health care clinic settings. It was designed for use by health care workers in developed and developing countries. AUDIT was designed specifically to detect problem drinkers rather than alcoholics by placing emphasis on heavy drinking and frequency of intoxication rather than signs of dependency (Haggerty, 1994). AUDIT is useful in screening for both currently harmful and potential hazardous drinking and has demonstrated high sensitivity and specificity, and it can identify mild dependence. Potentially, this is the screening questionnaire that should be of value to clinicians and researchers in the primary health care clinic in the future (Edwards, *et al.*, 1997; Cherpitel, 1997). The questions refer to lifetime alcohol experiences, as well as those in the past year, thus distinguishing between current and previous problems (Haggerty, 1994).

2.14. TREATMENT

The fact that the annual increase in new alcoholics is greater than the number who are successfully treated, and that it is from the population of non-problem drinkers that new problem drinkers emerge, requires society to make an effort to prevent alcohol abuse among people who are not experiencing any alcohol-related difficulties.

2.14.1. Primary prevention

Efforts are intended for individuals who drink alcoholic beverages but do not have alcohol-related problems, and those people who do not yet drink alcohol. The goal of prevention is to reduce the possibility of drinking problems occurring. It also involves identifying groups at increased risk including professionals, executives, young people, and women, especially those of childbearing age, and the elderly, as well as those with depression, other drug use or a family history positive for alcoholism (Edwards, *et al.*, 1997).

2.14.2. Secondary prevention

Intervention focuses on alcohol users whose drinking is causing problems, and attempts to keep these problems from becoming severe.

2.14.3. Tertiary prevention

The treatment deals with drinkers and alcoholics who are experiencing severe problems as a result of their drinking. The goal of treatment is to help these individuals stop drinking and return to a productive life (Edwards, *et al.*, 1997).

2.15. INTERVENTION

Alcohol use is associated with tremendous costs to the drinker, those around him or her, and society as a whole. These costs result from the increased health risks (both physical and mental) associated with alcohol consumption, as well as from the social harm caused by alcohol. To reduce alcohol's impact on the burden of disease, as well as on other social, legal, and monetary costs, therefore, it is imperative to develop effective interventions that can prevent or delay initiation of drinking among those who do not drink, particularly adolescents, and limit consumption to low-risk drinking levels among those who do consume alcohol.

The main goal is to make problem drinkers aware of the connection between their drinking and their physical health, personal relationships, job performance and circumstances. Many problem drinkers attempt to deny these connections and they may not be desperate enough to seek help on their own. In the light of this resistance, intervention is tailored to the individual and his or her circumstances (Edwards, *et al.*, 1997).

Sometimes, confrontational intervention treatment presents the problem drinker with clear evidence of his or her self-destructive behaviour. The confrontation might be produced by a spouse who threatens divorce, by an employer who threatens a loss of job or by a physician who points out the profound medical consequences of continued drinking. Such confrontations are

frequently successful in moving the problem drinker into action. In general, the earlier that intervention takes place in a drinking career, the more successful it is (Edwards, *et al*., 1997).

Current knowledge holds that the earlier the intervention in a potentially troublesome drinking career, the better the chances of reversing the trend and overcoming the problems. It is not the sole responsibility of teachers, employers or professional counsellors to carry out interventions, a remark by a friend or family members can help alert the person to the knowledge and concern that other people have about his or her drinking behaviour. Sometimes a single-session intervention might not have a successful impact; it might take several interventions before a person begins to take action. This is mainly because, when people are confronted with an aspect of their behaviour they do not wish to recognize, they often deny that it exists at all. This initial denial is often a reflection of an unconscious attempt to minimize a problem's significance and protect the ego against criticism. With sensitive, caring and supportive intervention the problem drinker will eventually feel comfortable enough to admit that he or she is having an alcohol-related problem (Fishman, 1992).

2.16. BRIEF INTERVENTION FOR ALCOHOL PROBLEMS

This section addresses the effectiveness of brief intervention and implementation in the health sector. Brief interventions are characterized by their low intensity and short duration and usually comprise one to three sessions of counselling and education. The goal is to provide early intervention. The assumption underlying screening and brief intervention in primary health care clinics is that, for identified risky drinkers, reducing overall alcohol consumption or adopting moderate drinking patterns will reduce the risk of medical, social, and psychological problems (WHO, 1996).

The effectiveness of brief intervention for risky drinkers

Brief interventions for reducing their levels of alcohol consumption and alcohol-related harm have been developed and implemented in many countries (Pennings, Leccese & Wolf, 2002).

These seek to change views of personal acceptability of excessive drinking and to encourage self-directed behaviour change. They include simple forms of structured advice and brief counselling (Whitlock, Polen, Green, Orleans & Klein, 2004). Easy access to these interventions is possible as they can be delivered by a wide range of generic practitioners (Grothues, Bishof, Reinhardt, Meyer, John & Rumpf, 2008).

An international evidence-based research has accumulated data for more than 20 years, with efficacy data originating mainly from English-speaking countries. Reductions in the volume of alcohol consumed are typically about 10-15% (Pennings, *et al*., 2002) and reductions in the proportions of hazardous drinkers are between 10-19% (Bien, Miller & Tonigan, 1993) following brief intervention. Reductions in alcohol problems of a similar magnitude and in health service utilization have also been identified (Wilk, Jensen & Havinghurst, 1997; Emmen, Schippers, Bleijenberg & Woller, 2004). Motivational Interviewing (MI), defined as "a facilitative, patient-centred counselling style for helping people explore and resolve ambivalence" (Fleming, *et al*., 1997), has become increasingly prominent within this literature.

Opportunistic screening and brief intervention (SBI) has been shown to be effective and cost-effective in reducing the health and social problems that result from excessive drinking (Anderson, 1993; Wilk, *et al*., 1997). In addition to providing health gains for patients, SBI may reduce societal costs of excessive drinking and result in economic gains for health services (Moyer, Finney, Swearingen & Vergun, 2002; Fleming, Mundt, French, Manwell, Stauffacher & Barry, 2003). Brief interventions have been viewed as having the most promise for treatment of individuals whose alcohol problems are in the mild-to-moderate range of severity. Accordingly, brief interventions may have their greatest public health influence in primary and secondary prevention efforts (Heather, 1995; Heather, 2002; Freyer-Adam, Coder, Baumeister, Bischof, Riedel, Paastsch, Welder, Rumpf, John & Hapke, 2008). A number of clinical trials for brief interventions for alcohol problems have been conducted in the primary health care clinic setting, where individuals are treated for medical problems that may be caused or exacerbated by the excessive use of alcohol (Fleming, *et al*., 1997; Parish, 1997). There is substantial evidence supporting the efficacy of brief intervention in reducing heavy drinking.

Heather (1986) reported a study whose subjects were recruited from newspaper advertisements, that sought people who considered themselves to be heavy drinkers. The purpose of the study was to compare the effectiveness of a self-help manual designed to help people to cut down their drinking with a simple information booklet. The author found that the group who received the self-help manual reported a significantly greater reduction in the previous week's mean alcohol consumption of the six-month follow-up than those who had been given the booklet. However, this difference was not maintained at the one-year follow-up.

In another study which used the media to recruit subjects, Sanchez-Craig, Spivak and Davila (1991) explored whether additional interpersonal contact was more effective than giving health-related literature on its own. It evaluated the effects of personal counselling and counselling when combined with two types of reading materials on patterns of alcohol consumption. It was found that, after one year, all groups reported a significant reduction in the mean number between the groups.

No control groups were used in the studies reported by Heather (1986) or by Sanchez-Craig, *et al*., (1991). Consequently, the extent to which the interventions (as opposed to any confounding variable) influenced the outcome cannot be assessed. Anderson and Scott (1992) found, in their controlled study of the effectiveness of minimal intervention by general practitioners, that statistically significant improvements were demonstrated one year after patients had been given simple advice about their alcohol consumption by their general practitioners. The effectiveness of minimal intervention approaches for problem drinkers in general hospital wards has also been demonstrated (Chick, Lloyd & Crombie, 1985; Babor & Grant, 1992).

In a study conducted by Chick, *et al*., (1985) the intervention consisted of a one-hour counselling session supplemented with an information booklet. One year later, statistically significant reductions in alcohol consumption were reported by both the control and treatment groups. The treatment group reported significantly fewer alcohol-related problems than the controls, and the

results were supported by changes in the results of liver function tests. All patients who were recruited to the study were males under 65 years of age and were either in employment or had recently been employed.

By excluding women, unemployed men and those over 65 years, the study failed to address the effectiveness of such interventions for a relatively large proportion of the general hospital patient population. Both the screening procedure and interventions were carried out by a nurse who was a specialist practitioner with considerable experience in counselling problem drinkers. It may be that such effects would not have been found if the interventions had been delivered by general nurses who work in acute care hospital wards and are able to spend as much time (i.e. one hour) in discussing issues relating to alcohol consumption as was given to the participants of the study.

A large international study of brief interventions for alcohol problems was conducted by a team of researchers in ten countries. The study was co-ordinated by the World Health Organization (Babor & Grant, 1992). One thousand six hundred and fifty five subjects were recruited from a variety of settings which included general hospital wards, emergency departments, primary health care clinics (PHC), health screening agencies, educational institutions and the workplace. Following recruitment to the study, subjects were assigned to one of three experimental groups for treatment: (i) a control group who received no treatment; (ii) a group who were given five minutes of simple advice about drinking; and (iii) a group (brief counselling condition) who were given more extensive advice in a 20 minute counselling session and a 30 page problem-solving manual about controlled drinking. Reductions in reported levels of alcohol consumption were seen in all groups, with the exception of the 'simple advice' group in two of the ten countries, and in a control group in one country. It appears that brief intervention may have a place in the repertoire of treatment modalities for problem drinkers.

Watson (1996), in another study, assessed the effectiveness of brief interventions, administered by a general hospital nurse, in an acute care setting, to help a sample of at-risk problem drinkers to achieve a reduction in alcohol consumption. The study evaluated the effectiveness of giving:

(i) a booklet containing information about sensible drinking limits, how to calculate consumption in standard units and suggestions about how to reduce consumption; (ii) the information as described in the booklet, but in a one-to-one personal interaction; (iii) a combination of the information in the booklet and the advice; and (iv) no treatment.

It was found that after one year, there was no significant difference in the levels of any of the outcome measures in those four groups. The results of this study did not show conclusive effects of minimal intervention. The study found that all groups reported lower levels of alcohol consumption in follow-up sessions. This finding is not confined to this study as reductions in mean drinking levels of the control group, as well as of the treatment group, was a feature in many of the studies of minimal interventions for problem drinkers (Chick, *et al*., 1985; Babor & Grant, 1992; Anderson & Scott, 1992).

The fact that there were highly significant reductions reported at the one-year follow-up for the entire sample, including the control group, for the mean levels of consumption, number of reported alcohol problems and the levels of both liver enzymes, could be because the detailed inquiry into drinking behaviour of the screening procedure acted in itself as an intervention. Its effect was to raise awareness of potentially harmful levels of alcohol consumption. This suggests that simply asking patients about alcohol consumption may act as an intervention in its own right. It could be that talking in detail with patients about the amount they drink at a time when they are unwell and, therefore, perhaps more sensitive to issues which relate to their health, is sufficient to encourage them to consider the implications of their drinking on their health.

2.17. IMPLEMENTING INTERVENTIONS

Intervention can best be implemented in the health sector. Parry and Bennetts (1998) note that "the first step is to identify alcohol problems at the primary health care clinic level." Health workers need to ask patients about their drinking practices in a way that will elicit honest answers. Secondly, there is a need to institute brief interventions for heavy drinkers at the

primary health care clinic level. There is no referring here to 'alcoholics'. Research in this area has been undertaken by the WHO in various developing countries, including Zimbabwe. This research has stressed that the target should be on consumption of alcohol itself and the focus should be on responsible drinking rather than on abstinence.

Two strategies have been proposed, namely giving brief interventions in the form of five to ten minutes of giving advice and issuing leaflets. The advice should focus, for example, on encouraging people to drink more slowly, to drink smaller quantities each time and on how to avoid intoxication. Brief intervention usually takes longer and comprises a form of condensed cognitive-behavioural therapy that includes the use of a self-help manual as well as follows visits (Parry & Bennetts, 1998).

WHO (2002) notes that in primary health care clinics, hazardous and harmful drinkers present themselves for treatment twice as often as other patients and may constitute 20% of the patients on a practice list. However, alcohol problems are responsive to early and brief intervention in primary health care clinics. A number of randomized controlled trials have shown that, in comparison with controls, hazardous and harmful drinkers receiving five to ten minutes of brief structured advice plus a self-help booklet from primary health care clinic workers will reduce alcohol consumption by an average of 25%. Primary health care clinics are a particularly valuable point of contact for the delivery of brief interventions because of the large proportion of the population who access primary health care services each year. Overall, it has been estimated that around 20% of patients identified as hazardous or harmful drinkers who receive a brief intervention will reduce their alcohol consumption.

Alcohol policy

The White Paper for Transformation of the Health System in South Africa, 1997 and the National Drug Master Plan, 1999 in South Africa have prioritized prevention and management of alcohol abuse and the integration of substance abuse in primary health care. The Department of Health (2001) has included in the service description of clinics the prevention and management

of substance abuse. Standards for PHC include health-learning materials on alcohol in local languages and competence of health staff in identifying alcohol abuse and providing basic counselling for behaviour changes and referral to NGOs specialising in substance abuse.

The Department of Health (1996) has also produced a primary health care clinic Mental Health manual, which includes a section on substance abuse and alcoholism. In 2001, the Department of Health trained trainers from all provinces on the prevention and management of substance use in primary health care. The training included the basics of early identification with the CAGE or AUDIT and brief intervention of alcohol problems. Consequently, various training workshops have been conducted on the prevention and management of substance abuse for multidisciplinary Primary Health Care staff in the provinces of South Africa.

Brief intervention is generally restricted to four or fewer sessions, each session lasting from a few minutes to an hour. The intervention is designed to be conducted by health professionals who do not specialize in addiction treatment. It is most often used with patients who are not alcohol dependent, and its goal may be moderate drinking rather than abstinence (NIAAA, 1999). However, when used for alcohol-dependence the goal is abstinence. Brief intervention has been used to motivate alcohol-dependent patients to enter specialised treatment with the goal of abstinence. Research indicates that brief intervention for alcohol problems is more effective than no intervention and often as effective as more extensive intervention (WHO, 1996).

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

This section presents the research methodology used when conducting the study. The first part describes the randomized control trial and its functions. This is followed by the description of the target population, sample and sampling procedure, instrument and data collection methods. This is followed by a description of how the data was analysed and the ethics observed while conducting this study.

3.2. RESEARCH DESIGN

Research design is a plan or blueprint of how a researcher plans or intends to conduct a study (Babbie & Mouton, 2001). It includes the methods and techniques used to collect, analyse and interpret data (Leedy & Omrod, 2001; Weiten, 2011). There are two major approaches to research, namely qualitative and quantitative approaches.

Qualitative research relies on language and the interpretation of its meaning. Data collection methods are dependent on the participants and do not involve testing of the hypothesis. Quantitative research data, however, is collected in order to determine numbers based on hypothesis testing (Creswell, 2003; Weiten, 2011). This study evaluates the effectiveness of the screening and brief intervention approaches concerning risky alcohol drinkers. The quantitative approach is more relevant to this study than the qualitative approach.

In this study, the researcher used the quantitative approach, which is a method that produces numerical data (Black, 1999). According to Thompson and Panacek (2006), scientific research is more thorough and the findings are more reliable when experiments have been used. Another advantage of using experiments is that if one wants to study the impact of an intervention on

human behaviour, experiments yield reliable data that can be repeated with more or less the same results (Weiten, 2011).

3.2.1. Experimental design

Experimental design is a research design where the researcher selects a group of subjects, does something to them, and observes the effects of what was done (Babbie & Mouton, 2001; Leedy & Omrod, 2001; Weiten, 2011). In experimental research, there are three major pairs of components, namely the independent and dependent variable; pre-test and post-test; and the experimental and control groups.

An experiment is defined as the collection of comparative data under controlled conditions (Jadad, 1998; Weiten, 2011). According to Kirk (1982), two of the distinguishing characteristics of an experimental design are the presence of one or more control groups, and the random assignment of participants to the experimental and control groups. In experimental research, the researcher controls and manipulates the independent variable in some way, in order to observe the effects of that manipulation on the dependent variable (Leedy & Omrod, 2001; Weiten, 2011). In a way, this compromises the control group in the sense that they are not receiving the manipulation on the independent variable.

The main characteristic of experiments is that they involve identifying and isolating individual aspects of a situation, making changes and observing the effects in detail. They are ideal for testing a hypothesis, and the basic aim of an experiment is to test the impact of an intervention on the outcome (Creswell, 2003; Weiten, 2011).

There are two types of experimental design, namely true experimental design and quasi-experimental design (Bennet, 2003; Weiten, 2011). The true experimental design uses a matched control and experimental group, and their equivalence is achieved by allocating numbers randomly to either group. In quasi-experimental design, however, this is not the case; non-equivalent groups are used.

The major strength of using a true experiment or randomized control trial is that it is able to hold all other extraneous variables constant, and to vary only those factors of interest. This enables researchers to determine with confidence whether the effects observed are due to the factors that have been manipulated, though it is not always possible for a researcher to have control over participants. The strength of the experimental design is that participants can be randomly assigned to conditions to rule out other rival hypotheses, but the major weakness of a true experimental design is matching the control and experimental groups, which is not always easy (Bennet, 2003; Weiten, 2011). In this study, a randomized control trial was used and is discussed in the following section.

3.2.2. Randomized control trial

A randomized controlled trial is defined as a study in which people are allocated at random (by chance, like the flip of a coin alone) to receive one of several clinical interventions (Jadad, 1998). One of these interventions is the standard of comparison or control. The control may be a standard practice, a placebo ('sugar pill'), or no intervention at all. Randomized controlled trials seek to measure and compare the outcomes after the participants have received the interventions. Because the outcomes are measured, randomized controlled trials are quantitative studies (Jadad, 1998).

After recruiting a total group of subjects, the researcher may randomly assign those subjects to either the experimental or control group (Babbie & Mouton, 2001; Weiten, 2011). In this study, the randomized control trial was used as the study aimed at evaluating the effectiveness of an intervention method (BI) for risky drinkers. A randomized control trial allows a researcher to compare two groups before intervention and after intervention to determine whether the intervention done had any impact and also to show if it can be used as an intervention method.

In this study, after the researcher had conducted the screening (pre-test), that is the administration of an AUDIT questionnaire, participants were randomly assigned to two groups, the experimental group and the control group. The experimental group was exposed to brief intervention, while the

control group was not. The control group received no intervention and was provided with only an information leaflet on cutting back consumption. Between the pre-test and post-test of participants, the experimental group received brief intervention and then after a period of six months, a post-test re-administration of the AUDIT questionnaire was done. This was done to compare the change in drinking behaviour in both groups prior to intervention and post intervention for the experimental group at Time 1 and Time 2 and for the control group at Time 1 and Time 2.

Jadad (1998) argues that Randomized Control Trials are quantitative, comparative, controlled experiments. The RCT is one of the simplest and most powerful tools in clinical research (Stolberg, Norman & Trop, 2004). RCTs are considered the most reliable form of scientific evidence because they eliminate all forms of spurious causality (Jadad, 1998). RCTs are mainly used in clinical studies but are also employed in other sectors such as judicial, educational and social research (Stolberg, *et al.*, 2004). Clinical RCTs involve allocating treatments to subjects at random. This ensures that the different treatment groups are 'statistically equivalent'.

The randomization procedure gives the randomized controlled trial its strength. Random allocation means that all participants have the same chance of being assigned to each of the study groups. The allocation, therefore, is not determined by the investigators, the clinicians, or the study participants (Jadad, 1998). The purpose of random allocation of participants is to ensure that the characteristics of the participants are as likely to be as similar as possible across groups at the start of the comparison (also called the baseline). If randomization is done properly, it reduces the risk of a serious imbalance in known and unknown factors that could influence the clinical course of the participants. No other study design allows investigators to balance these factors.

In essence, the randomized controlled trial is a study in which people are allocated at random to receive one of several clinical interventions (Jadad, 1998). On most occasions, the term "intervention" refers to treatment, but it should be used in a much wider sense to include any clinical manoeuvre offered to study participants that may have an effect on their health status.

Such clinical manoeuvres include prevention strategies, screening programmes, diagnostic tests, interventional procedures, the settings in which health care is provided, and educational models (Jadad, 1998).

Randomized controlled trials are used to examine the effect of interventions on particular outcomes such as death or the recurrence of disease. Some consider randomized controlled trials to be the best of all research designs, or "the most powerful tool in modern clinical research", mainly because the act of randomizing patients to receive or not receive the intervention ensures that, on average, all other possible causes are equal between the two groups. Thus, any significant differences between groups in the outcome event can be attributed to the intervention and not to some other unidentified factor (Stolberg, *et al*., 2004).

However, randomized controlled trials are not an answer to all clinical questions. For example, the effect of a risk factor such as smoking cannot ethically be addressed with randomized controlled trials. Furthermore, in many situations randomized controlled trials are not feasible, necessary, appropriate or even sufficient to help solve important problems (Jadad, 1998; Stolberg, *et al*., 2004). Randomized controlled trials are not appropriate for cancer screening, a situation in which the outcome is rare and frequently occurs only after a long delay. Thus, although the test for appraising the ultimate value of a diagnostic test may be a large well-designed randomized controlled trial that has patient outcomes as the end point, the trial should presumably be performed after other smaller studies have examined the predictive value of the test against some accepted standard (Jadad, 1998; Stolberg *et al*., 2004).

3.2.3. Randomized Controlled Studies

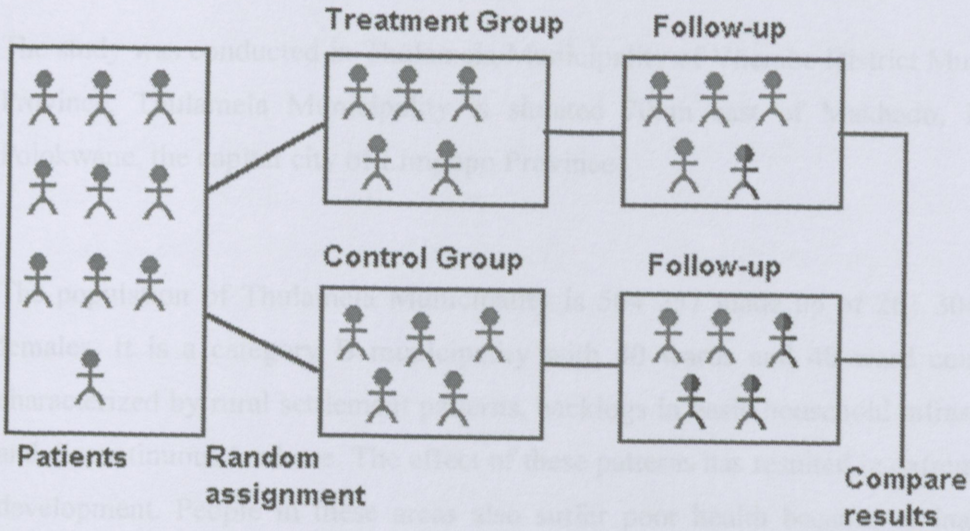

Figure 3.1. The process of a randomized control trial

A randomized controlled study is one in which:

1. There are two groups, namely one treatment group and one control group. The treatment group receives the treatment under investigation, and the control group receives either no treatment or some standard default treatment.
2. Patients are randomly assigned to all groups.

Assigning patients at random reduces the risk of bias and increases the probability that differences between the groups can be attributed to the treatment. Having a control group allows researchers to compare the treatment with alternative choices. For instance, the statement that a particular medication cures 40% of the cases tells very little unless researchers also know how many cases get better on their own (or with a different treatment).

Randomized controlled trials are the standard method of answering questions about the effectiveness of different therapies. If a researcher has a therapy question, he or she should first look for a randomized controlled trial, and then go on to look for other types of studies only if one is not found.

3.3. LOCATION OF THE STUDY

The study was conducted in Thulamela Municipality of Vhembe District Municipality in Limpopo Province. Thulamela Municipality is situated 70km east of Makhado, 180km north east of Polokwane, the capital city of Limpopo Province.

The population of Thulamela Municipality is 584 257 made up of 261 304 males and 322 953 females. It is a category B municipality with 40 wards and 40 ward councillors. The area is characterized by rural settlement patterns, backlogs in basic household infrastructure and services, and discontinuous land use. The effect of these patterns has resulted in extreme poverty and under-development. People in these areas also suffer poor health because of inadequate housing and health facilities. Thulamela Municipality is divided into two geographical areas, namely Thohoyandou and the surrounding rural settlement, and Malamulele (and the surrounding areas). The largest portion of the population is of school going age. Even though Thulamela has many people with different cultures and languages, the predominant cultures are those of the Tsonga/Shangaan and VhaVenda people which have a unique but unified history.

The study was conducted at a primary health care clinic, namely, Sibasa clinic in the Thulamela Municipality. The Vhembe District Municipality health services are offered in the following health establishments:

a) One regional hospital;
b) Six district hospitals;
c) One hundred and ten clinics;
d) Three get away clinics;
e) One health information centre;
f) Nineteen mobile clinics.

3.4. POPULATION

A population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying (Babbie & Mouton, 2001). The population of this study was comprised of people who arrived to consult health professionals at Sibasa clinic for any physical ailments. The people were interviewed by the researcher using the Alcohol Use Disorder Identification Test (AUDIT) to determine whether they were risky drinkers, in order to be included in the study. The risky drinkers were those who had a score of 8-19 on the AUDIT questionnaire. The population of this study (N=140) consisted of 105 males between the ages of 20 and 47 and 35 females between the ages of 21 and 40 at baseline.

At post-test, the population (N=132) comprised 98 males between the ages 20 and 47 and 34 females between the ages of 21 and 40. This study was part of the bigger Screening Brief Intervention project that was conducted in Limpopo Province. The study was approved by the University of Venda School of Health Sciences Research and Publication Committee and Senex. Permission to conduct the study was granted for the bigger Screening Brief Intervention project by the provincial Department of Health, and local health authorities. In this study the permission for the larger study was used. Ethical clearance was obtained for this study from the University of Venda Ethics Committee.

3.4.1. Sampling procedure

Sampling is a process used to select cases for inclusion in a research study. Shipman (1988:52) define sampling as "a systematic way of choosing a population small enough to study and large enough to be representative". The main aim of sampling is to save time, effort and to obtain consistent and unbiased estimates of the population status in terms of what is being researched.

There are two main types of sampling methods, each with different subtypes: probability and non-probability sampling (Babbie & Mouton, 2001). In probability sampling, each element of the population has the same known equal chance of being chosen at random and has the same

known equal probability of being selected. In non-probability sampling, however, the chance of selection for each element is unknown and for some elements the chance is zero (Bless & Higson-Smith, 2000; Strydom & Venter, 2002). A sample is taken to enable a researcher to learn more about the population from which that sample has been drawn because it is impossible to study the entire population.

This study used an experimental design which involved patients at Sibasa clinic being selected and randomly assigned to either the experimental group to receive the experimental alcohol intervention or to the control group to receive information leaflets and no intervention. The researcher administered the AUDIT questionnaire to screen participants. Following informed consent and completion of baseline assessment prior to intervention, the researcher drew a randomly computer-generated group assignment in a sealed envelope to determine under which experimental group each participant should fall. The two groups to which they were put were the SBI experimental group and the control group (receiving information leaflet on cutting back). Random assignment occurred following the baseline assessment.

Participants who met the criteria were asked to participate in the study. Criteria for inclusion in the study were that prospective participants had to be over 18 years old, that they had to be both males and females, and that after screening, should have scored between 8 and 19 on the AUDIT questionnaire. Those who scored 20 or more on the AUDIT were referred to the hospital for further management.

3.4.2. Sample size

A sample is defined as a small subgroup of a population or representative group of people selected from the population the researcher is interested in studying (Babbie & Mouton, 2001). The size of the sample depends on the type of study. In experimental designs, for example, only a few participants can be used. Strydom and Venter (2002) are of the opinion that 30 participants are enough to perform statistical procedures, although there are some authors who feel that a minimum of one hundred is required. Some writers argue that when one is using an experimental

design that involves two or more groups, there should be a minimum of 30 participants per group.

The power of a statistical test is the probability that the test will reject the null hypothesis when the alternative hypothesis is true; that is, the probability of not committing a Type II error. As the power analysis increases, the chance of a Type II error decreases. Power analysis can be used to calculate the minimum sample size required so that one can be reasonably likely to detect an effect of a given size. Probabilities of 0.05 (1 in 20); 0.01 (1 in 100) and 0.001(1 in 1000) increase the chances of rejecting the null hypothesis when the null hypothesis is false, decreasing the chances of a Type II error.

Priori power analysis is considered the ideal type of power analysis. Researchers specify the size of the effect to be detected; that is, the measure of the distance between H0 and H1), the α level and the desired power level (1-β) of the test. Faul, Erdfelder, Buchner & Lang (2009) have argued that priori power analyses are ideal in that low error probabilities α and β can be achieved for any specification of the effect size; however, the calculated sample sizes are usually much larger than what is considered manageable in behavioural research. They argue that other factors like financial constraints, time constraints and methodological reasons such as sample heterogeneity in the case of data aggregation across studies prohibit the use of ideal sample size. Assuming that a behavioural scientist has arrived at a maximum N that can be achieved given the institutional constraints of the research, the N will most likely be smaller than the ideal N as determined by priori power analysis. Thus the only way to arrive at a reasonable power level is to increase the chances of committing an error (Faul, *et al.*, 2009). In this study, priori statistical power calculation was not done.

Prajapati, Dunne and Armstrong (2010) recommended that if the priori power analysis was not done then the post hoc power analysis can be done. Post hoc analysis involves determining the level of statistical power achieved for a given sample size, effect size and alpha level. Therefore this type of power analyses is most useful at the end of a study. What is actually important here is that the clinically relevant effect size is specified and not the actual effect size found based on the results of the study.

3.4.3. Blinding

Blinding is a practice where study participants are prevented from knowing certain information that may somehow influence them, thereby affecting the results of the study. To ensure that the highest degree possible that the intervention is responsible for any noted differences between the two groups, people involved in the gathering or analysing data might also be blinded to knowing who is being given the treatment and who is not (Day & Altman, 2000). In this study, the participants were blinded in the sense that they did not know whether they were assigned to a control group or an experimental group.

3.5. RESEARCH INSTRUMENT

This study adopted the AUDIT (Alcohol Use Disorder Identification Test), which is a screening tool that was developed by WHO in 2001. The AUDIT which is a 10-item questionnaire provides a systematic screening (see appendices), of alcohol use (Babor & Grant, 1992; Babor, Higgins-Biddle, Saunders & Monteiro, 2001). The AUDIT is administered either as an oral interview or as a self-report questionnaire and is recommended for screening in a primary health care setting. The screening total score is considered a simple way to provide each patient with an appropriate intervention, based on the level of risk. Brief intervention strategies are recommended for non-dependent risky drinkers (Babor & Higgins-Biddle, 2001). The main advantage of using a questionnaire is that it is cheap and is also quick way to collect data from a larger group (Wilson & Sapford, 2006). The SBI methods were copied from the WHO collaborative study on brief interventions (WHO, 2001).

Alcohol use in this study was assessed using the AUDIT. The AUDIT is a measure of the prevalence of alcohol use. The AUDIT's 10 items cover the three conceptual domains of consumption, dependence symptoms, and alcohol-related consequences that were intended to parallel the World Health Organization concepts of hazardous drinking, alcohol dependence, and alcohol-related harm. Because AUDIT is reported to be less sensitive at identifying risky drinking in females (Freeborn, Polen, Hollis & Senft, 2000), the cut-off points of binge drinking

for females (Abiodun, 1996) were reduced by one unit as compared with those of males (Chinyadza, *et al*., 1993). Furthermore, an assessment of alcohol use using a cut-off score of 8 or more was made for hazardous or harmful drinking. Hazardous drinking is defined as a quantity or pattern of alcohol consumption that places patients at risk for adverse health events, while harmful drinking is defined as alcohol consumption that results in adverse events (e.g., physical or psychological harm).

3.6. VALIDITY

Validity refers to the extent to which an instrument measures what it is intended to measure (Bennet, 2003). There are two types of validity in experimental research, internal and external validity. There are different factors that are relevant to both internal and external validity.

Maximising validity and minimizing bias

The question here is: To what extent can the intervention, rather than other influences, be considered to account for differing outcomes between the treatment and control groups? If not controlled in experimental design, these factors could produce effects that will interfere with the effect of the experimental stimulus. However, in randomized control trials, by employing a control group and random assignment, the RCT design minimizes bias and threats to internal validity by equalising the conditions on all "other influences" except for the intervention. Internal validity deals with the degree to which the findings of the research can be generalized to the whole population represented by the participants.

The following threats are common to internal validity that the random assignment addresses:

- **History.** External events that occur during the course of a study that could explain why people changed. An example is a life event such as a death in the family or being laid off from work. Negative life events, such as these, may offer an alternative explanation for study outcomes.

- **Maturation.** Psychological and biological processes that occur within individuals over the course of a study that provide an alternate explanation of why they changed.
- **Selection.** Another threat to validity may occur if the experimental and control groups differ at baseline.
- **Regression to the mean.** The tendency for extreme scorers to regress to the mean on subsequent measurements.
- **Attrition.** The rate of loss of participants from the study that differs between the intervention and control groups.

Minimising threats to external validity

The question here is: To what extent can the results be extended to people, settings, and interventionists different from those used in this particular study?

These are common threats to external validity that an RCT can address. They are:

- **Sample characteristics.** This refers to the extent to which we can generalize from the study sample to the population as a whole (or the population of interest).
- **Hawthorne effect.** People tend to react differently when they know they are being observed.

In this study, the observed factors that posed a threat to the validity were history, experimental mortality and the Hawthorne effect.

- History posed a threat because there were many events that could have happened between Time 1 and Time 2. In order to minimize that threat, the distance between Time 1 and Time 2 was six months.
- Experimental mortality was minimized by using participants from the same local area.
- The Hawthorne effect was difficult to control, but participants were informed about how it was important for them not to please the researcher, and to be honest in their responses.

- Pre-testing could have sensitized participants so that their response to treatment would be different.

In this comparison, outcomes for people randomly assigned to receive the new treatment are compared with those of people assigned to receive no treatment at all. The question is whether the new treatment produces any benefit at all, over and above the change due to the passage of time or the effects of participating in a study. A challenge with this control condition is that people receiving no treatment may find their own treatment outside the bounds of the study.

3.7. RELIABILITY

Reliability is the extent to which the instrument gives the same results after re-administration; this is re test reliability. The AUDIT is currently the only instrument specifically designed to identify hazardous and harmful drinking and is valid for detecting heavy drinking also in a general population sample (Aalto, Alho, Halme & Seppä, 2009). Cronbach alpha for the AUDIT was .78 for this sample. The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization as an effective screening instrument for alcohol use problems among patients seeking primary care for other medical problems in international settings, including African countries, namely Kenya and Zimbabwe (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2005; Babor, *et al.*, 2001). It has also been widely used as a standard tool in South Africa (Peltzer, 2006; Peltzer, Davids & Njuho, 2008).

3.8. DATA COLLECTION

The 10-item Alcohol Use Disorder Identification Test (AUDIT) (Babor, *et al.*, 2001) assesses alcohol consumption level (3 items), symptoms of alcohol dependence (3 items), and problems associated with alcohol use (4 items). In South Africa, a standard drink is 12g of alcohol. Freeborn, *et al.* (2000), reported that AUDIT is less sensitive at identifying risk drinking in women, that is, five or more units of alcohol per occasion. Therefore, Freeborn, *et al.*, (2000)

recommend that the cut-off points of binge drinking for women be four units of alcohol per occasion and five units for men. Responses to items on the AUDIT are rated on a four-point Likert scale ranging from 0 to 4 for a maximum score of 40 points. Higher AUDIT scores indicate more severe levels of risk with scores of 8 indicating a tendency to problematic drinking.

In this study, the AUDIT was administered at the baseline to determine those who would be included in the study. Patients who tested positive, that is, those with a cut-off score of 8-19 on the AUDIT questionnaire were eligible to participate in the study. After randomization, participants were grouped into an experimental group and the control group. The experimental group received intervention according to their category of alcohol consumption and the control group received only a leaflet on cutting back consumption. After six months, a follow-up was done, and the AUDIT was re-administered to collect post-test data. The AUDIT was administered in Tshivenda, which is the language that is spoken by nearly all the patients at the clinic.

Data were analysed by means of statistics. Statistics is defined as the study of methods for describing and interpreting quantitative information, including techniques for organising and summarizing data, and techniques for making generalizations and inferences. Numerical data can make a valuable contribution to evaluation research. The use of statistics in evaluation serves three primary purposes, namely:

- It is used to summarize a large amount of information through measures of central tendency or dispersion.
- It provides for frequency distribution to exhibit clusters and separation of responses.
- It provides a level of confidence that the data truly are representative of the intervention.

The collected data were captured and analysed using the Statistical Package for Social Sciences (SPSS). SPSS is a set of computer programmes that can be used to do different types of

statistical analyses. The advantage of using a statistical programme is that is enables one to calculate statistics quickly and accurately. SPSS can be divided into two categories, namely, data management and data analysis procedure.

The AUDIT score served as the dependent variable and the data from the AUDIT were analysed by means of a 2 x 2 repeated measures analysis of variance (ANOVA), with Time (pre-post intervention) being the within factor and Group (experimental-control) being the between factor. Missing data owing to non-response were deleted on an analysis-by-analysis basis. The researcher used an intent-to-treat analysis by including all participants who completed baseline assessments and who were randomized to intervention conditions. Individual cell sizes vary owing to missing values. Statistical significance was defined using the conventional value of $p<.05$.

Retention and attrition of participants

A total of 140 patients (35 women and 105 men, of mean age 30.7 years, SD=6.5 years, ranging from 20 to 47 years) enrolled in the study, completed baseline assessments, and were randomized to two conditions. All participants in the experimental condition (N=70), could be followed up (N=70), while participants in the control condition (N=70) 58 completed the follow-up interview (attrition rate of 17.1%). The overall attrition rate was 8.6%.

3.9. THE INTERVENTION

After the screening and assignment of participants to the control group and experimental group, those assigned to the control group were provided with the self-help leaflets on cutting back. They received no counselling. For ethical reasons only the leaflet that deals with cutting back consumption was given to this group.

The experimental group received the intervention. The brief intervention protocol indicates four components, namely: ask about alcohol use, assess, advise and assist. This includes direct feedback

about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (WHO, 2001).

According to the WHO protocol of brief intervention, after the administration of the AUDIT, the positive results are indicative of the next step which is provision of an appropriate intervention that meets the needs of each patient. Patients who score negatively in the AUDIT should be reminded about the benefits of low risk drinking or abstinence and told not to drink in certain circumstances such as when operating a vehicle or machinery, when pregnant or when considering pregnancy, if a contra-indicated medical condition is present or after using certain medications such as sedatives, analgesics and selected antihypertensive medication (WHO, 2001).

There are four levels of risks identified in the protocol and are as follows:

Zone I refers to low-risk drinking or abstinence.

Zone II consists of alcohol use in excess of low-risk guidelines and considered hazardous. It is generally indicated when the AUDIT score is between 8 and 15. A brief intervention using simple advice and patient education materials is the most appropriate course of action for these patients (WHO, 2001).

Zone III consists of alcohol use that is considered harmful in that the patient has started to experience problems because of alcohol use. The AUDIT score in this category is between 16 and 19. A combination of simple advice, brief counselling and continued monitoring with further diagnostic evaluation if the patient fails to respond or is suspected of possible alcohol dependence (WHO, 2001).

Zone IV is suggested by an AUDIT score in excess of 20. These patients are to be referred to a specialist for diagnostic evaluation and possible treatment for possible alcohol dependence. If the specialist services are not available, these patients can be managed in primary care. Patients can be managed first at the lowest level of intervention by their AUDIT score. If they do not respond to the initial intervention, they should be referred to the next level of care (WHO, 2001).

Brief intervention for hazardous and harmful drinking constitutes a variety of activities characterized by their low intensity and short duration. They range from 5 minutes of simple advice about how to reduce hazardous drinking to several sessions of brief counselling to address more complicated conditions. Intended to provide early intervention before or soon after the onset of alcohol-related problems, brief interventions consist of feedback of screening data designed to increase motivation to change drinking behaviour as well as simple advice, health education, skill building and practical suggestions. The elements of brief intervention protocol are as follows: present screening results, identify risks and discuss consequences, provide medical advice, solicit patient commitment, identify goals, such as reduce drinking or abstinence and give advice and encouragement (WHO, 2001).

In this study, participants were randomized and allocated to the experimental group, completed AUDIT at baseline and received brief intervention for alcohol reduction. The goals of brief intervention were to identify alcohol-related problems, to provide sensible drinking leaflets emphasizing the idea of sensible drinking limits and to make sure that patients realize that they are in the low-risk drinking category, and to provide feedback on their alcohol use,

The participants whose alcohol consumption was categorized as Zone II level of risk received a 10 minute session, which involved giving them feedback on their drinking behaviour as indicated by their AUDIT score, encouraging them that they had not yet developed problems related to alcohol, but that if they kept on drinking the way they were drinking, they were likely to develop alcohol-related problems. During the session, they were given simple advice about how they could reduce their hazardous drinking. Basically, clients were provided with information about sensible drinking and the effects of drinking.

The participants whose alcohol consumption was consider as Zone III level of risk received a 25 minute session of brief counselling. The session comprised the basic elements of brief intervention which involved providing participants with feedback on their drinking behaviour as indicated by their AUDIT score, identifying risks, discussing consequences of their alcohol consumption, providing medical advice, soliciting their commitment, identifying their goal of either reducing consumption or abstinence, and then giving them advice and encouragement. They were

educated the effects of alcohol on one's body and other areas that are problematic owing to alcohol use. They were also assessed at that point in terms of their readiness to change their behaviour. This was done using a scale of 1-10 to determine how ready they were to change the way they had been drinking. Depending on the readiness to change, the drinking behaviour from pre-contemplation and/or contemplation, the researcher then talked about how to cut back or stop drinking. The researcher helped the clients to identify situations that might tempt them to go back to this unhealthy drinking behaviour, and together with the researcher, the clients devised strategies to deal with those situations. Then the clients were also prepared in terms of how to deal with relapses and encouraged to return if there were any challenges. Clients were also informed that they would be contacted by the researcher after six months, to check on them and how they had been progressing since this intervention.

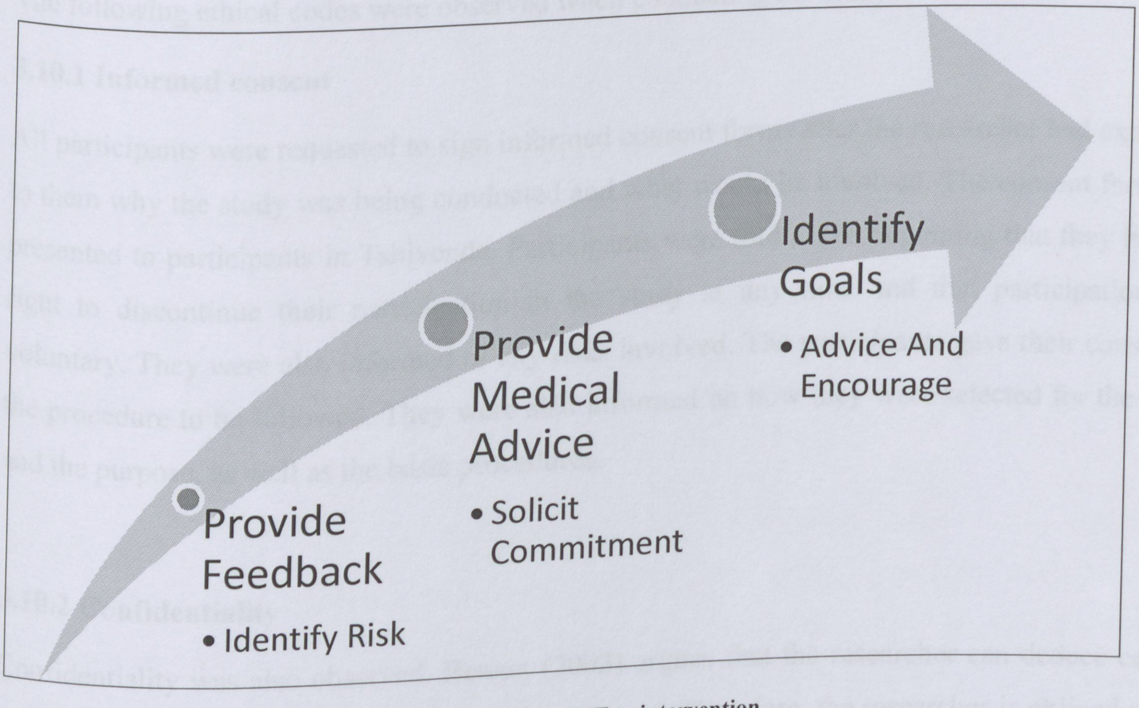

Figure 3.2. The process followed from administering AUDIT to intervention

Post intervention

The AUDIT was re-administered to 132 participants six months after the intervention. All participants (N=70) who were in the experimental group were re-assessed and only 62 from the

control group were re-assessed. Follow-up or re-assessment was done at the patients' homes and some were done telephonically. The assessment was done to determine whether the intervention had led to any behavioural change. It was assumed that after the intervention, if the control group showed no change, and the experimental group showed substantial change, then the change could be due to the intervention. The pre- and post-tests were used to evaluate the effectiveness of brief intervention. Data was collected from both groups at two different points in time, Time 1 (pre-test) and Time 2 (post-test). The disadvantage of the pre-test and post-test is that the pre-test often sensitizes participants to the post-test questions, when the same questions are used for both pre-test and post-test.

3.10. ETHICS

The following ethical codes were observed when conducting the study:

3.10.1 Informed consent

All participants were requested to sign informed consent forms after the researcher had explained to them why the study was being conducted and what would be involved. The consent form was presented to participants in Tshivenda. Participants were told at the beginning that they had the right to discontinue their participation in the study at any time and that participation was voluntary. They were also informed of any risks involved. The participants gave their consent to the procedure to be followed. They were also informed on how they were selected for the study and the purpose, as well as the basic procedures.

3.10.2 Confidentiality

Confidentiality was also observed. Bennet (2003) argues that the researcher can deduce certain personal information from the participants' responses. Therefore, the researcher is obliged not to divulge the information to any person. There are three main reasons for declaring confidentiality. It improves the quality and honesty of responses, especially on sensitive issues. It also encourages participation in the study and therefore increases the representivity of the sample, and lastly confidentiality is offered to protect a person's privacy (Weiten, 2011).

In this study, numbers were assigned to questionnaires which were linked to the names of the participants. Their names, with the corresponding number on the questionnaire, were written in a book and this information was kept in a safe place. The researcher was the only person who had access to that book. This was done so that when the participants had completed the post-test questionnaire, the researcher would be able to match the participants' numbers and names so that they could complete the same questionnaire. Study findings were honestly reported.

3.10.3 Compensation

Participants did not receive any remuneration for completing the baseline and for returning to the clinic for the follow-up assessment. Following the six-month follow-up, participants in the health education control group were offered the experimental alcohol reduction intervention.

All study procedures were approved by the University of Venda Research Ethics Committee and the Limpopo Provincial Department of Health in South Africa, as well as District and clinic authorities.

3.11. CONCLUSION

In this chapter, the researcher discussed the type of research design used, namely the experimental or randomized control trial used in this study. Although there are some disadvantages associated with randomized control trials, as with any other designs, this design is a powerful tool for conducting an intervention study. Different threats to validity were identified. Data were collected at pre-test and at post-test levels, and an intervention was conducted with the experimental group before the second assessment. The following chapter presents the findings of the study.

CHAPTER 4: FINDINGS

4.1. INTRODUCTION

In this chapter the findings of this study are presented.

4.2. DATA ANALYSIS

AUDIT score results

Paired samples tests analyses found a significant reduction of the AUDIT score in both the intervention (t=15.47; P<0.001) and the control (t=11.28; P<0.001) group, although the experimental group had a higher reduction than the control group. Using ANOVA, there was no overall significant intervention effect between experimental and control groups at a six month follow-up (see Table 4.1).

Table 4.1: AUDIT score reduction outcomes among participants at baseline and 6 months follow-up following intervention (N=140)

	Experimental	Control	ANOVA	
	M (SD)	M (SD)	**F**	**P**
AUDIT score*				
Baseline	13.1 (3.8)	12.7 (3.2)	.405	0.526
Six month follow-up	7.0 (3.6)	8.1 (4.3)		

At baseline

Participants in both control group and experimental group were categorized into 3 zones, that is, zone II, III and IV.

Post intervention

Participants were re-assessed using the AUDIT questionnaire six months after the intervention. The results of the post-test are shown below.

The sample included 132 patients, 70 in the experimental group and 62 in the control group. The mean age of the experimental group was 30.8 (SD=6.5) and the control group 30.6 (SD=6.6), *t* =.23, p =.815. There were also no significant differences of other demographic variables: In the experimental group there were 54 men and 16 women, and in the control group 51 men and 19 women (χ^2=0.34, P=.558).

Participants were categorized according to the zones. The results indicate that there was a shift in drinking behaviour, with a new category of drinkers that was not there during pre-testing, namely zone1. Even though the control group did not receive any intervention, there was change in the drinking behaviour. Participants in the experimental group received intervention and the results indicate that there was also a change in their drinking behaviour.

Zone I- This is for people who scored 1-7 in the AUDIT. The current study only included the low risk drinkers. People who fell under this category at baseline were not included in the study. At the six month follow-up, those participants who were risky drinkers had moved from other zones to this zone. There were 17 males in the control group and 10 females from the control group, while 32 (24.4%) males and 11 (8.3%) females were in the experimental group. These participants were referred to as sensible drinkers. Normally these people drink to relax or socialize. Their intervention entailed giving them feedback on their drinking and encouraging them not to go

beyond this way of drinking, as well as providing them with information on the effect of drinking alcohol.

Zone II- At baseline, the number of participants who were found eligible to participate in this study were 97; there were 68 males (48.5%) and 29 females (20.7%) who scored 8-15 on the AUDIT. At six months post intervention, there were 22 (16.6%) males and five (3.8%) females in the control group, while 20 (15.2%) males and four (3.0%) females were in the experimental group. They are an at-risk group; that is, if they continue to drink the way they are, they might start to experience problems owing to their alcohol intake. Their intervention entailed giving them feedback on their drinking and providing them with information on the effect of drinking alcohol as well as talking to them about cutting back.

Zone III- At baseline, participants who were found eligible to participate in this study were 38, 19 males (13.5%) and 2 females (1.4%) in control group and 14 males and 3 females in the experimental group. The participants scored 16-19 on the AUDIT. At six months post intervention, there were four (3.0%) males and three (2.3%) females in the control group, while two (1.5%) males and no (0%) females were in the experimental group. Their intervention lasted for 30 minutes. They were given feedback on their drinking, information on the effect of drinking alcohol and information on how to reduce their drinking. After providing them with the information the researcher assessed their readiness to change their drinking behaviour. Depending on their readiness to change, the researcher then helped them to plan their behaviour change and then to action.

Zone IV- This group is referred to as the dependency drinkers. These people had already developed some psychological dependence on alcohol and were unable to control their drinking. At baseline, participants who were found eligible to participate in this study were one male (%) and no females (0%) who scored 8-15 on the AUDIT. At six months post intervention there were one (0.75%) male and no (0%) females in the control group while no (0%) males and one (0.75%)

female were in the experimental group. All the processes that were followed above apply with regard to these groups. The group was then referred to hospital for further management.

When classifying the consumption behaviour by AUDIT score, comparing before Brief Intervention and at six months follow-up, and among the experimental group at before Brief Intervention among the 70 risky drinkers, 42 were found to be hazardous drinkers, seven were harmful drinkers and one was a possible alcohol dependent drinker. After a six month interval among the experimental group consisting of 70 risky drinkers, 43 reduced their drinking to low risk drinking, 24 were hazardous drinkers, two were harmful drinkers and one remained a possible alcohol dependent drinker. It is evident that after the intervention at the six month interval, there was a decrease in drinking behaviour from high risk to low risk drinking.

As far as consumption behaviour in the control group is concerned, at baseline there were 70 risky drinkers, of these 48 were hazardous drinkers, 21 were harmful drinkers and one was a possible alcohol dependent drinker. After the intervention at the six month interval, 62 participants were assessed. At the six month follow-up among the 62 risky drinkers in the control group 27 had reduced their drinking to that of low risk drinkers, 27 were hazardous drinkers, seven were harmful drinkers and one remained a possible alcohol dependent. Noticeably, 27 risky drinkers had become low risk drinkers.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

In this chapter the findings of the study and literature control are presented.

5.2. Discussion

It emerged from this study that there was a significant reduction in the drinking patterns of both groups. Other randomized controlled trial studies had previously found that once the participants had been subjected to questions about their behaviour, they changed their behaviour whether exposed to intervention or not. However, it is not surprising that findings like this reveal behaviour changes even in the control group; this has been confirmed by previous studies. A study by Godin, Bélanger-Gravel, Amireault, Vohl, and Pérusse (2011) discovered that asking questions about cognition regarding physical activity positively influenced subsequent self-reported participation in the risky drinkers' behaviour over a three-month period. There could be different reasons why people change their behaviour post intervention, whether they are exposed to intervention or not. Some previous researchers have argued that the change in behaviour could be due to mere-measurement effect. According to French and Sutton (2010), this mere-measurement effect is also more likely to be detected when health-related behaviours are subjectively assessed.

A study conducted by Hermansson, Helander, Brandt, Huss and Roonberg (2010) found no significant differences between intervention groups and control groups. They concluded that alcohol screening may in itself cause reduction in the drinking. In agreement with a previous observation only very few tested positive for both baseline and follow-up alcohol screening. These results are also supported by this study. Of those enrolled in this study based on a positive alcohol screening results who also attended follow-up session after six months, only about 62 participants tested positive. Those allocated to the control group received no feedback about their

screening results; this may suggest that alcohol screening can in itself lead to a reduction in drinking.

Previous studies have reported that assessing only intention by means of a few items, changes subsequent performance of studied behaviours at follow-up (Fitzsimons & Williams, 2000; Sprott, Smith, Spangenberg & Freson, 2004; Levav & Fitzsimons, 2006), including physical activity (Williams, Block & Fitzsimons, 2006).

The precise mechanism behind the mere-measurement effect is still a matter of debate (French & Sutton, 2010). At this time, the dominant explanation of this effect is that asking behavioural intention questions heightens the accessibility of the person's attitude towards the behaviour, which in turns increases the likelihood that the behaviour will be adopted (Morwitz & Fitzsimons, 2004).

Other researchers have attributed this to the possibility of a cross-over effect that is present. Beich, Gannik, Saelan, and Thorsen (2007) argue that having been primed by the screening questionnaire, some control patients may have become more aware of their drinking and may be more open to discussing alcohol use issues with their doctors. In their study, they tried to minimize this effect by early randomization of all participants. This made it possible for them to avoid any feedback on the screening result being given to control-group patients. Controls merely took place in a rolling survey, and neither the patient nor the doctor knew about the screening result at any point.

Other researchers argue that changes in the measured behaviour of the control group should be viewed with caution because there might be different reasons that the control group behaviour changes even if there was no intervention. Many factors can be attributed to the change in the behaviour of the control group other than the assessment impact of clinical trials.

a) Blinding of study purpose (investigation of changes in alcohol consumption)

The previous researchers argue that a lack of blinding of subjects regarding the purpose of the studying can trigger social desirability bias, defined as the inclination of participants to give the researcher what they think the study is designed to find (Babor, McRee, Kasselbaum, Grimaldi, Ahmed & Bray, 2007; Kypri, 2007; Nye, Agostineli & Smith, 1997). As Daeppen, Gaume, Bady, Yersin, Calmes, Givel & Gmel (2007) maintain "there is reason to expect that these participants may have been aware of the nature of the study and adjusted the self-report in some manner".

b) Sample mix

The other reason for a positive change in a control group is attributed to sample mix. The previous researchers argue that enrolment may be affected by design elements, such as re-imbursement level or time requirements for completion of study procedures. In a non-treatment population, telegraphing the purpose of the study in consent form may predispose only clients who are already considering change to enrolling. They argue that it is common in the clinical research setting for patients to conceal substance abuse for fear that labelling might negatively influence a practitioner's willingness to provide medical care. Moss (2007) cites social control theory as a contributing factor to this phenomenon and social learning theory as the context for consequences of non-blinding.

The sample mix for brief alcohol intervention studies is also affected by the rate of the capture of eligible patients. Refusal to enrol in studies is more common in the primary care settings where patients are identified by screening, and alcohol use is rarely the presenting problem. In particular, small samples and randomization without blocking for problem intensity can result in a skewed distribution of acuity. If the sample is weighed toward the low end of the scale (high risk drinkers), there will naturally be fluctuations over time in consumption if the sample consists of primarily dependent drinkers who consume at outlier levels, and there will be a greater tendency to observe variations in measurement as a result of regression to the mean (Morton & Toggerson, 2005).

Moss, (2007) argued that assessment can raise an individual's awareness of risky drinking, initiate self-monitoring and lead to recognition of a discrepancy between current behaviour and a personal normative standard, communicate implicitly personal responsibility and impel a need for a change creating bias towards the null (Kypri, 2007). This type of connection is a final component of motivational intervention to reduce unhealthy alcohol use.

c) Procedures for control condition discharge

The argument here is that brief interventions in clinical studies require the control groups to receive a combination of normative feedback, and advice or referral. Standards of clinical care require that results be addressed by practitioners and in many countries institutional review boards require that control groups receive advice and/or referral resources. (Epstain, Drapin, Yusko, Cook, McCrady & Jensen, 2005; Clifford & Maisto, 2000).

d) Regression to mean

Alcohol intake varies over time and by season, except in the most dependent of drinkers (Dawson & Room, 2001). Regression to the mean at the time of repeated measurement may be a longer factor in self-reported declines in alcohol intake of control groups. Regression to the mean is to be expected, because outcomes conditions that vary over time are being measured. Measuring these outcomes with, admittedly imperfect instruments, an outlier value at enrolment is likely to be expected with a more moderate value at follow-up. Because of this variation, there is likely to be measurement bias because observations at Time 1 and at Time 2 may not reflect a true distribution (Morton & Toggerson, 2005; Finney, 2005).

e) Measurement/analysis issues

Variance in alcohol consumption end point is often larger with skewed distribution or outliers that may reduce statistical power and can complicate analyses. The treatment of outliers and transformation of data to account for skewedness must be considered for consumption endpoints. In order to limit inadvertent moderators of control group drinking, study participants must be blinded. Daeppen *et al*, (2007). Using a briefer version of a standardized instrument, that is,

replacing the long questionnaire AUDIT with also validated AUDT C which has three questions Kypri (2007). Nye, Agostineli and Smit (1999) suggest that normative feedback must be avoided, so as not to create heightened awareness that mimics intervention. Kypri (2007) proposes attention to a randomization procedure that will ensure a wide range of subjects and thus limit potential for bias; Morton & Toggerson (2005) stresses the importance of avoiding selection of the most severe cases in order to avoid pitfalls associated with regression to the mean.

In the current study, however, the experimental group had a higher reduction than the control group. This may be attributed to the brief intervention that was used. However, this analysis needs to be interpreted with caution. Although, overall, the data are consistent with the intervention being effective, the size of the true effect was probably smaller than the researcher had anticipated.

In the present study, brief intervention did not have an additional effect in comparison with the AUDIT screening. Most published brief intervention studies that did not find any additional benefit of brief intervention showed a decrease in alcohol use both in experimental and control groups. This parallel decrease was explained either by a Hawthorne effect, a natural history effect, or by regression to the mean (Beich, *et al*., 2007). A study conducted by Beich, *et al.* (2007) did not find any decrease in alcohol use in either group. This can be explained by the fact that they included 83% of all patients screening positive in the AUDIT, and that the intervention was provided without delay as recommended (Babor & Grant, 1992; Babor, *et al*., 2001). In the current study, this is possibly due to the lower impact of brief intervention in this target population.

Brief intervention has previously been found to be less efficient among alcohol dependents (Bien, *et al*., 1993; Madras, Compton, Avula, Stegbauer, Stein & Clark, 2009). Furthermore, lack of differences between interventions may simply show that screening alcohol use with AUDIT and providing feedback about the score has a positive impact on alcohol-drinking behaviour (McCambridge & Day, 2008). This phenomenon has been suggested by different studies and could correspond with what Jenkins, McAlaney and McCambridge (2009) call reactivity assessment. The

results were also possibly due to spontaneous adaptations of the naturalistic treatment as usually received by both groups following AUDIT screening or BI.

The results also indicate that the overall effect of intervention in the intervention group was not statistically significant. This means that even though it cannot be disputed that the intervention had an impact, the impact was not very great or was not very significant compared to the change in behaviour that occurred in the control group. In their study Beich, *et al*., (2007) who screened only 6897 patients, found 1087 (15.8%) risky drinkers, of whom 906 (13.1%) non-dependent drinkers became study participants and 537 (7.8%) were followed up. In another primary health care trial Senft, Polen, Freeborn & Hollis (1997) used the AUDIT to define the trial group, and included 78% of those who screened positive. The main intervention was not delivered by the doctor, but by a skilled counsellor. Nevertheless, only a modest, temporary reduction in the drinking frequency, but not in the overall amount of alcohol consumption, was achieved in this study.

Several systematic reviews have confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals (Bien, *et al*., 1993; Kahan, Wilson & Becker, 1995; Wilk, *et al*., 1997; Poikolainen, 1999; Moyer, *et al*., 2002; Ballesteros, Gonzalez-Pinto, Querejeta & Arino, 2004). Until lately, little attention has been paid to the issue of the external validity of these results (Edwards & Rollnick, 1997; Beich, *et al*., 2007. A systematic review (Berltholet, Daeppen, Weitlisbach, Fleming, Burnand, 2005) on the efficacy of brief alcohol intervention concluded that intervention could reduce alcohol consumption, but that the effectiveness of such interventions in daily practice remains unexplored.

This gap between efficacy and effectiveness has also been recognised by some of the pioneers of brief intervention (Heather & Wallace, 2003). The proposals to overcome this gap have, so far, focused on the search for even better screening tools and better implementation strategies for the SBI programme.

It is not uncommon in randomized control studies to find that there were changes in both the interventions group and control group at post-test. Previous researchers (McCambridge & Day,

screening provokes contemplation about drinking and makes the patient aware of his or her alcohol intake in a way that might not occur otherwise. In the first study specifically to examine the direct effects of screening, McCambridge and Day (2008) showed that being screened with AUDIT with no subsequent BI or other intervention led to reduced self-reported hazardous drinking, with the effect sizes being similar to the known effects of BIs. They argued that this was a "remarkable demonstration of the potency of alcohol screening as an intervention in its own right".

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

In the current study, paired samples tests analyses found a significant reduction of the AUDIT score in both experimental (t=15.47; P<0.001) and control (t=11.28; P<0.001) groups; although the experimental group had a higher reduction than the control group. Using ANOVA, there was overall no significant intervention effect between experimental and control conditions at six months follow-up (see Table 4.1). Findings related to this study were also observed in other studies. Areesantichai, Iamsupasit, Marsden, Perngparn and Taneepanichskul (2010) did the t-test comparing the change of AUDIT score difference at baseline and after the follow-up at each intervention. After the follow-up in two communities, there was a significant difference of the total score at .001. Their findings were also consistent with the previous research findings like those of Bien, *et al.* (1993); and Moyer, *et al.* (2002) which confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals.

5.5. CONCLUSION

Different authors maintain that if both the control and the experimental groups are similar before the intervention, and if only the experimental group receives intervention, differences after

intervention must be attributed to the intervention (Bennet, 2003). However, Kazdin (1980) argues that even groups which are similar at the beginning might become different owing to other reasons other than the effects of the intervention.

In this study, the experimental group showed a significant change in their drinking behaviour after the brief intervention. What is surprising is that even those in the control group also changed their drinking behaviour. There could be different reasons for this improvement. Firstly, since they were assessed at the primary health care clinics they could have been told about reducing their drinking by the nurses during their consultation. Secondly, since they were provided with information on cut-back leaflets they could have thought about it and changed their behaviour. Thirdly, the interaction in the community between the control group and the experimental group could also have led them to share information between the two tests.

CHAPTER 6: SUMMARY OF FINDINGS, LIMITATIONS OF THE STUDY, RECOMMENDATIONS AND CONCLUSION

6.1. INTRODUCTION

This chapter presents the aims and objectives of the study, hypotheses, summary of findings, limitations of the study, recommendations which are based on the findings of the study, as well as the concluding remarks.

6.2. SUMMARY OF FINDINGS

The main aim of the study was to evaluate the effectiveness of the Screening and Brief Intervention for risky alcohol use in the primary health care setting.

Specifically, the objectives of the study were:

- To pre-test the use of alcohol using the AUDIT;

The AUDIT questionnaire was pre-tested on two groups, the experimental group and the control group. At baseline, the AUDIT was administered to 140 participants divided into two groups of 70 each. The findings indicated that in the control group, 54.2% males and 14.1% females fell within Zone 2 category; 27.1% males and 2.8% females were in Zone 3; and 1.4% males and 0% females into Zone 4. Among the experimental group, 42.8% males and 27.1% females were found to be Zone 2 drinkers; 20% males and 4.2% females were in Zone 3; and 4.2% males and 1.4% females fell into Zone 4.

- To implement the SBI;

Brief intervention was conducted with the experimental group. Seventy participants received the intervention and the control group was provided only with the leaflet on cutting back. The results

indicated that among the control group, 54.2 % of the males and 14.1 % of the females were hazardous drinkers; 27.1% of the males and 2.8% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 42.8% of the males and 27.1% of the females were found to be hazardous drinkers, while 20% of the males and of the 4.2% females were found to be harmful drinkers, and 4.2% of the males and 1.4% of the females were possibly alcohol dependent.

- To post-test the use of alcohol six months after the intervention.

Six months after intervention, the AUDIT questionnaire was re-administered to both control and experimental groups. This was done to assess their alcohol intake after the intervention as well as to assess if the intervention done was successful. The results indicated a decrease in alcohol consumption in both groups. At baseline, all the participants were grouped in the zones, from Zone 2 to Zone 4 and at follow-up they were grouped from Zone1 to Zone 4. The results indicated that among the control group, 24.2% of the males and 14.2% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 31.4% of the males and 7.1% of the females were hazardous drinkers; 5.7% of the males and 4.2% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 45.7% of the males and 15.7% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 28.5% of the males and 4.2% of the females were found to be hazardous drinkers, while 2.8% of the males were found to be harmful drinkers and 1.4% of the females were possibly alcohol dependent.

The findings of this study show that the screening and brief intervention for alcohol risky drinking was effective as it reduced the level of drinking after the intervention. As in previous studies, it was also found that by asking people questions related to their behaviour, people changed that particular behaviour.

6.3. LIMITATIONS OF THE STUDY

The limitation was that the distance in time between the pre-test and post-test was six months and this threatened the internal validity of the study because some of the participants could not be reached to do the post-test.

There are different factors such as lack of time, fatigue, personal beliefs and other personal priorities that affect the way participants cooperate. The challenge that the researcher experienced during data collection was that the participants had to come to the primary health care clinic for other ailments and some complained that participating in this study was going to delay them. After it was explained that the questionnaire was not that long and that they would complete the questionnaires in the cubicle while waiting to see the sister, they cooperated.

6.4. RECOMMENDATIONS

The researcher recommends that, since the findings of this study indicate that the screening and brief intervention is effective in reducing alcohol consumption, the SBI be adopted as a compulsory routine screening at primary health care clinics. The compulsory screening can be adopted to help identify potential at-risk drinkers, for instance, mental health care users. The early identification of potential problem drinkers and intervention for mental health care users might help to prevent the relapse and revolving door syndrome. This is because most of the mental health care users who are in and out of the hospital also use alcohol.

In ante natal care, SBI can be done as part of the nurses' history taking. This will help reduce the risk of children born with Foetal Alcohol Syndrome. It will also help reduce maternal and infant death which is one of the millennium developmental goals.

In the care for and treatment of patients with chronic conditions, for example, diabetes and hypertension, compulsory SBI is also important because the majority of patients with chronic conditions get their treatment at the primary health care clinic instead of at private facilities. Most patients on chronic medication for diabetes and hypertension lead unhealthy lifestyles that include risky drinking while taking medication. Compulsory SBI will assist identify those who need intervention and continuous support.

Compulsory SBI is also necessary for all individuals receiving medical attention in any given setting even if it is not at the primary health care clinic, for example, in major companies where they provide health care services on-site. The compulsory SBI will help companies to identify those people who need intervention and they can provide support.

The compulsory screening can also be adopted in other settings that are not necessarily health related, for example, as part of issuing drivers' licenses and in the renewal of those licenses in order to prevent unnecessary accidents.

In trauma centres victims of sexual gender based violence (SGBV) are taken for further management. As part of a holistic approach to ensure a health body and mind, it is imperative to screen for risky alcohol use. This is basically because previous researchers and authors have indicated that alcohol misuse has many negative consequences, ranging from health risks, financial difficulties, trouble with the law, social relationships problems, and family problems.

Policy makers to make policies that will ensure that screening and brief intervention with regard to alcohol use are made compulsory in primary health care settings.

It can also be integrated in the training of all health care professionals

There is a need to get the cooperation of compulsory SBI health care professionals for SBI to be effective at primary health care level. The following implementation programme is recommended:

6.4.1. Background

Screening is done using the AUDIT questionnaire to find out about people's use of alcohol and it was developed by World Health Organization. The AUDIT can be used at primary health care clinics because primary health care is the first contact with the health system for people seeking care, and most people attend primary health care facilities at least once per year.

Many common problems seen at primary health care settings may be made worse by alcohol use. SBI provides an opportunity to educate patients about the risk of excessive alcohol use. There is evidence that the use of alcohol is prevalent throughout the world and is associated with a significant public health burden. Excessive alcohol use is also a risk factor for a wide variety of social, financial, legal and relationship problems for individuals and their families.

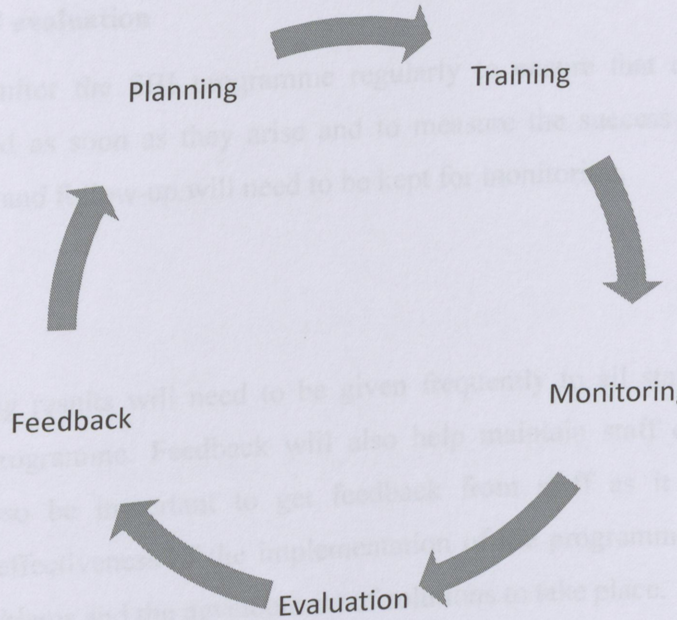

Figure 6.1: The process of implementing the SBI programme at primary health care centres

6.4.2. Planning

When implementing a programme like SBI, it is important for the staff members who are involved to understand the reasons for the programme, to feel a sense of ownership and enthusiasm for its implementation, understand their roles and be committed to making it work. There must be a coordinator for the implementation of the programme. This person will be responsible for making sure that all staff members understand their roles and responsibilities and that all the necessary tasks are carried out.

6.4.3. Training

Staff must be trained to implement the SBI programme. Effective training will enable staff members to discuss their roles and functions responsibly and also their attitudes towards screening and early intervention for harmful drinking. Training also provides opportunities for role play and supervised practice in administering AUDIT and carrying out follow-up activities.

6.4.4. Monitoring and evaluation

It is important to monitor the SBI programme regularly to ensure that any implementation problems are addressed as soon as they arise and to measure the success of the programme. Records of SBI details and follow-up will need to be kept for monitoring.

6.4.5. Feedback

Feedback of monitoring results will need to be given frequently to all staff for the on-going improvement of the programme. Feedback will also help maintain staff commitment to the programme. It will also be important to get feedback from staff as it will help provide information about the effectiveness of the implementation of the programme. This will enable the identification of problems and the development of solutions to take place.

6.5. CONCLUSION

The aims and objectives of this study were achieved. A research instrument was designed and used for both pre-test and post-test assessments. The hypothesis that was formulated and tested was supported by the study and one hypothesis was not supported.

This chapter reported the limitations that were observed. They included the drop out of some participants. Certain gaps in the research methodology were identified. These included issues related to the instrument. Four areas in which improvements can be made were listed. Recommendations based on the findings of the study were made.

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Appendix 1.

AUDIT Questionnaire

The Alcohol Use Disorders Identification Test (AUDIT): Interview Version

Dear Participant,
As part of my research I am conducting a study on the prevalence of alcohol use among patients who are coming to the clinic for consultation for any other illness. This information is important because it will assist us to tailor intervention according to your needs. To help me do this, now I would like to ask you some questions about your use of alcohol beverages during the past twelve months. Your answers to these questions will be treated in strict confidence. No details of your name will be written on this questionnaire.

Age:___ years **Gender:** [1] Male [2] Female **Date:** ____/____/_____

A standard drink is:

	*A single tot of spirits (whisky, gin & vodka) (e.g., 25ml at 43%)*		**1.1.1.1.1** A small glass of liqueur or aperitif *(e.g., 25ml at 30%)*		
	*1 can of ordinary beer (e.g., 340ml at 5%)*		*1 glass of wine (e.g., 120ml at 12%)*		*Cartoon of ordinary commercial sorghum beer (e.g., 500ml at 3%)*

1. How often do you have a drink containing alcohol in the past 12 months?
   - (0) Never [*skip to Qs 9-10*] ☐
   - (1) Monthly or less ☐
   - (2) 2 to 4 times a month ☐
   - (3) 2 to 3 times a weeks ☐
   - (4) 4 or more times a weeks ☐

   [___]

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   - (0) 1or 2 ☐
   - (1) 3or 4 ☐
   - (2) 5or 6 ☐
   - (3) 7, 8, or 9 ☐
   - (4) 10 or more ☐

   [___]

3. How often do you have (for men) five or more and (for women) four or more drinks on one occasion?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [___]

Skip to question 9 and 10 if Total Score for Qs 2 and 3 is =0

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [___]

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [___]

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [___]

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [___]

8. How often during the last year have you been unable to remember what happened the night before because you had been drunk?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐

   [___]

9. Have you or someone else been injured as a result of your drinking?
   - (0) No ☐
   - (2) Yes, but not in the last year ☐
   - (4) Yes, during the last year ☐

   [___]

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you to cut down?
    - (0) No ☐
    - (2) Yes, but not in the last year ☐
    - (4) Yes, during the last year ☐

    [___]

Record total of specific items here [___]

Appendix 2: Consent letter and consent form

Consent letter

Dear Respondent,

I am Mpho Ramarumo from the University of Venda. I am conducting research regarding Evaluation of the screening and brief intervention for risky alcohol use in primary health care clinic in Sibasa local area in Thulamela municipality: A randomized controlled trial. You are kindly requested to participate in this study by responding to the few questions that I would like to ask you. The study is conducted for educational purposes.

Please note that participation is voluntary and you do not have to take part in this study. However, I would really appreciate it if you would share your thoughts with me. If you choose to participate you may still quit at any time, there will be no penalties and you will not be prejudiced in any way.

I will not record your name and the information you provide will remain confidential and there will be no repercussions from the answers you give. The interview will last around 10 – 15 minutes. I know that you cannot be absolutely certain about some of the answers but I ask that you be as open and honest as possible in answering these questions. Some questions may be personal in nature and I will also ask some questions that may involve thinking about and recalling the past or thinking about the future. I hope that does not make you feel too uncomfortable

Thank you.

Consent Form

Consent form

I hereby agree to participate in the research on -- --------------------------- I understand that I am participating freely and without being forced in any way to do so. I also understand that I can quit at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the interview and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to me and my community on the results of the completed research.

Signature of Respondent Date: ----------------------------

Signature of Researcher Date: ------------------------------

Telephone Number:

Evaluation of the screening and brief intervention for risky alcohol use in Sibasa primary health care clinic in Thulamela Municipality: A randomized controlled trial.

by Mpho Ramarumo

Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology at the University of Venda

Promoter: Prof. K. Peltzer

Co-promoter: Prof. L.B. Khoza

Submitted on April 2014

DECLARATION

I, Mpho Ramarumo, hereby declare that the thesis for the Doctorate of Philosophy degree in Psychology at the University of Venda, hereby submitted by me, has not previously been submitted for a degree at this or any other institution, and that it is my own work in design and execution, and that all reference material contained therein has been duly acknowledged.

Signature

23/4/2014

Date

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DEDICATION

I dedicate this study to my dear family who have been there for me and supported me throughout;

My dear husband who was so supportive and encouraging through it all;

My boys Thembuluwo and Zwothezwiunakele who had to compromise and understand why I had to be absent from the house for many days while I was working on this thesis;

My late father and mother, Mr. Ntsudzuluseni Amos and Mrs. Mashudu Grace Ramarumo, who encouraged me and believed in me from the time I started school; and

My siblings, Tendani, Zwidofhela, Takalani and Ntsudzuluseni. Thank you all for your support.

ABSTRACT

Background

The use of alcohol as a drug is common in many societies, and has a history stretching back for millennia (Rodseth, 2012). There is a well-developed culture surrounding the production and consumption of alcoholic beverages, as they form part of celebrations, meals and religious rituals and frequently form the hub of social interaction (Rodseth, 2012). In a review of the data from national surveys carried out in South Africa, Peltzer and Ramlagan (2009) found that binge drinking was between 7% and 11% and risky drinking, 6.9%. South Africa appears to have one of the highest levels of alcohol consumption per drinker in the world. Up to a third of drinkers in this country drink at risky levels over weekends, and it is common for them to drink to intoxication (Peltzer & Ramlagan, 2009). Thirty to fifty percent of people, who drank in 2008, experienced at least one alcohol-related problem, such as missing work or having interpersonal problems (Schukit, 2009).

Disorders related to alcohol use are responsible for a large proportion of the health-care burden in many countries. Alcohol affects almost every organ in the body (Schukit, 2009). Alcohol-related traumatic injuries, as a result of violence and motor vehicle accidents are common in South Africa. The levels of Foetal Alcohol Syndrome are the highest ever recorded (Peltzer & Ramlagan, 2009). Studies show very strong links between drinking and the engagement in risky sexual behaviours, increasing the risk of HIV infections (Peltzer & Ramlagan, 2009). Risky alcohol use is a problem as it creates many negative consequences for both the drinker and the people near to him/her. There is a need for an effective method to help those who are risky drinkers to reduce their drinking.

The use of brief intervention can be very effective in helping the patients reduce or discontinue alcohol abuse (Rodseth, 2012). The brief intervention protocol includes four components, namely: ask about alcohol use, assess using the Alcohol Use Disorder Identification Test (AUDIT), advise using the brief intervention protocol, and assist. Intervention includes direct feedback about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (Saunders, Aasland, Amundsen & Grant, 1993).

Objectives

- To pre-test the use of alcohol with the aid of the Alcohol Use Disorder Identification Test;
- To implement the screening and brief intervention; and
- To implement a post-test to ascertain the use of alcohol 6 months after the intervention.

Data collection and analysis

A sample of 140 participants who consulted the Sibasa clinic was selected using the AUDIT questionnaire, and then randomly sampled to be either part of a control or experimental group. Each group consisted of 70 participants. After selection, the control group was provided with only an information leaflet on how to cut down alcohol. The experimental group was provided with individual counselling. Depending on their drinking behaviour, the counselling the experimental group received ranged from simple advice, alcohol education and brief counselling. Six months after the first AUDIT, both groups were reassessed to ascertain if there had been any change in drinking behaviour.

Main results

The baseline data was compared with the post test data using ANOVA and the results showed a significant reduction of the AUDIT score in both experimental ($t=15.47$; $P<0.001$) and control ($t=11.28$; $P<0.001$) groups. However, the intervention group had a higher reduction in alcohol consumption than the control group. Using ANOVA, showed that there was, overall, no significant intervention effect between experimental and control conditions at the 6 months follow-up.

Author's conclusions

Overall, brief intervention was effective in reducing the consumption of alcohol. There was improvement on the alcohol consumption of the control group. The sample was small, hence there is a need for future researchers to continue the research using bigger samples.

ACRONYMS

AUDIT	Alcohol Use Disorder Identification Test
BACs	Breath Alcohol Concentration
DALY	Disability Adjusted Life Years Lost
FBDG	Food-based Dietary Guidelines
HIV/AIDS	Human Immunodeficiency Virus/
MRC	Medical Research Council
NIAAA	National Institute on Alcohol Abuse and Alcoholism
PHC	Primary Health Care
RCT	Randomized Control Trial
SADHS	South African Demographic and Health Survey
SBI	Screening and Brief Intervention
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1. INTRODUCTION

The use of alcohol as well as the problems arising from its misuse is of widespread concern. The major impact of the misuse of alcohol is on the lives of both drinkers and the non-drinkers. These problems range from financial, legal and social problems to health problems that include the spread of sexually transmitted infections such as HIV/AIDS. The use of alcohol and other substances is also associated with the high rate of gender-based violence in South Africa (WHO, 2005).

Attempts to make people aware of the impact of alcohol misuse before complications develop owing to alcohol addiction have been made in various places. Awareness campaigns about alcohol use and misuse have been conducted to reduce the use of alcohol. However, the rate of alcohol misuse is still rising. There is a need for some form of intervention that will address the issue of alcohol use and misuse in the primary care setting where people can be reached before problems develop.

This study evaluated the effectiveness of screening and brief intervention to prevent alcohol misuse in the primary health care setting. The study used a randomized control trial or an experimental research design with patients who consulted primary health care centres for any ailments as research subjects. Participants included in the study were chosen through the use of random sampling. They were then divided into two groups, namely, the experimental group and the control group. Both groups were assessed before the intervention and after the intervention. The experimental group also received intervention before taking the second assessment. The results of both groups were compared and analysed using statistical package for social sciences (SPSS) as a way of evaluating the effectiveness of the brief intervention.

This chapter presents the following:

The background of the study, and the statement of the problem;

The aims and objectives of the study;

The significance of the study;

The proposed hypotheses;

Definitions of concepts;

Delimitations of the study;

Organization of the dissertation;

Conclusion.

1.2. PROBLEM STATEMENT

Alcohol consumption has been part of human history since time immemorial. There are numerous biblical examples and ancient myths that refer to alcohol. Local history and archaeological findings also suggest that consumption of alcohol has always been part of African culture, rituals, traditions and customs. However, the fact that people still continue drinking alcohol and pass down this habit through generations does not adequately explain why alcohol is consumed. Moreover, patterns of alcohol use have changed significantly over time and evidence suggests that the quantity consumed now is far greater than in earlier times (Gumede, 1995; Parry & Bennets, 1998). The World Health Organization (WHO) estimates that around two billion people world-wide consume alcohol (WHO, 2004). There is clearly no single reason why they do so or why different people drink to different extents. It is apparent that drinking is influenced by factors such as genetics, social environment, age, culture, gender, personality, accessibility and exposure (Parry & Bennets, 1998).

The consumption of alcohol is associated with many problems, not only for the person who drinks, but for other people who might be directly or indirectly affected by the drinking behaviour. Alcohol consumption is associated with many health-related problems and has been implicated in many violence-related injuries and deaths around the world.

In South Africa statistics have shown that alcohol has been associated with many diseases, injuries and high mortality rates. The mortuary statistics of 2002 given by the Medical Research Council (MRC) indicated that in Cape Town, Durban, Gauteng and Port Elizabeth, 45% of all non-natural deaths had Blood Alcohol Concentrations (BACs) greater than or equal to 0.05g/100ml; specifically Durban had 37%, Gauteng 40%, Cape Town 53% and Port Elizabeth 61%. Levels of alcohol were particularly high for transport-related deaths and homicides with 63% of transport-related deaths and 69% of homicides reported in Port Elizabeth, as having levels above the legal limit for driving (0.05g/100ml) (Plüddemann, Parry, Donson & Sukhai, 2004).

The MRC 2001 statistics from trauma units indicate that in Cape Town, Durban and Port Elizabeth, 39% of trauma patients had breath alcohol concentrations (BrACs) greater or equal to 0.05g/100ml; Durban had 22%, Gauteng 36%, and Port Elizabeth 57%). Levels of alcohol were particularly high with regard to transport and violence injuries with, for example, 73% of patients with violence-related injuries in Port Elizabeth and 46% patients with transport-related injuries in Cape Town having high alcohol levels above the legal limit for driving (Plüddemann, *et al.*, 2004).

The 2003 MRC statistic for the demand of specialist treatment services indicate that of 5886 people treated at 52 specialist substance abuse treatment centres in Cape Town, Durban, Mpumalanga and Port Elizabeth in the first half of the year, 52% reported having alcohol as their primary drug of abuse, with a further 13% having alcohol as their secondary drug of abuse (Myers & Parry, 2005).

Foetal Alcohol Syndrome (FAS) statistics of research conducted in Western Cape (Wellington) indicate that the prevalence of Foetal Alcohol Syndrome among Grade 1 learners was 46 per 1000 in 1997 and 75 per 1000 in 1999 (Croxford & Viljoen, 1999). Similar research conducted in Gauteng and De Aar in 2001 and in Upington in 2003 found FAS prevalence rates of 19, 103, 75 (estimates) per 1000 respectively.

A study conducted by the MRC in Atteridgeville in 2003 on alcohol and risky sex statistics among people aged between 25 and 44 found a significant positive association between various measures of alcohol use, previous month's use, frequency, problems and having multiple sexual partners or sexual relations that were regretted in the three months before the study (Morojele, Kachiengá, Nkoko, Moshia, Mokoko, Parry, Nkowane & Saxena, 2004). For example, the correlation between the quantity of alcohol consumed and the number of sexual partners (over a lifetime) was 0.436.

In 2000 a report by MRC on the statistics of alcohol and family violence, indicates that in Cape Town, Durban and Johannesburg between one-third and half of charged offences categorized as family violence, reported that perpetrators were under the influence of alcohol at the time of the alleged offence (Parry, Plüddemann, Louw & Leggett, 2004). Other reports indicate that academic failure and absenteeism were also significantly associated with alcohol consumption (Peltzer, Cherian & Cherian, 1999a).

This gives a picture of alcohol consumption in South Africa.

Many people are ignorant of the facts regarding the impact and effects of drinking alcohol; they do not know the dangers associated with drinking alcohol. The question arises: What needs to be done to reduce this problem?

This study sought to evaluate the effectiveness of Screening and Brief Intervention (SBI) in the primary care setting as an area where problems associated with the use of alcohol can be addressed.

1.3. AIMS AND OBJECTIVES OF THE STUDY

The main aim of the study was to evaluate the effectiveness of screening and brief intervention in the primary health care setting in reducing the use of alcohol.

Specifically, the following were the objectives of the study:

- To pre-test the use of alcohol using the Alcohol Use Disorder Identification Test;
- To implement screening and brief intervention;
- To post-test the use of alcohol six months after the intervention.

1.4. SIGNIFICANCE OF THE STUDY

It is the intention of this study to show the strength of screening and brief intervention for risky alcohol consumption.

The findings of this study are also useful for training of health care providers on how to screen and intervene for risky alcohol use.

1.5. HYPOTHESES

For this study, the following hypotheses were formulated:

a) If patients are screened for their alcohol use and subjected to an intervention strategy, they will change their drinking behaviour.
b) If patients are screened for their alcohol use and receive only an information leaflet on how to cut down on their drinking, they will not change their drinking behaviour.

1.6. DEFINITION OF CONCEPTS

Alcohol misuse: The over-use or incorrect use of beverages containing alcohol or ethanol

Evaluation: A strategy used to determine the worth or value of an intervention

Screening: A method used to assess the presence and the extent of the symptoms of a problem

Brief intervention: An action used for a limited time to assist in the elimination of the existing symptoms of a problem.

DELIMITATIONS

The study included only patients who presented themselves for treatment of any ailments in the clinics in the Sibasa local area in Vhembe District Municipality.

1.7. ORGANIZATION OF THE DISSERTATION

Chapter 1 provides an introduction to the study.

Chapter 2 presents a literature review about the nature of alcohol misuse.

Chapter 3 sets out the research methodology used to conduct the study.

Chapter 4 presents the findings of the study.

Chapter 5 presents a discussion of the findings of the study.

Chapter 6 summarizes the findings of the study, draws conclusions from the findings and presents recommendations based on the conclusions.

1.8. CONCLUSION

This chapter presented the background of the problem, the problem statement and the hypotheses regarding alcohol screening and brief intervention. It outlined the main aim, the objectives and the significance of the study. Significant concepts were defined and the study was delimited.

The chapter that follows reviews the literature on the nature of alcohol use.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, literature related to the study is reviewed. The chapter is divided into sub themes that include: alcohol use in South Africa, theoretical perspectives, categories of alcohol drinkers and the causes of alcohol use. It also reviews previous studies about the screening and intervention with regard to alcohol consumption.

2.2. PREVALENCE OF ALCOHOL USE IN SOUTH AFRICA

A report by the Medical Research Council in South Africa indicates that in 1997, just under half men (45%) and one-fifth of women (17%) 15 years and older in South Africa reported that they consumed alcohol. Rates of drinking differed substantially by population group and gender, with the highest levels of alcohol reported by white males (71%), followed by white females (51%), and Coloured males (45%). The lowest rates were reported by African and Asian females (12% and 9% respectively). For both men and women, higher rates of drinking were recorded in urban areas. For males the highest drinking levels (50% or more) were reported in the Free State and Gauteng and the lowest levels (28%). were reported in the Northern Province. For females, the lowest levels were also recorded in the Northern Province (9%), with the highest levels in the Free State, Western Cape and Northern Cape (23%-25%). For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year age groups (MRC, 1998; Flisher, Parry, Evans, Muller & Lombard, 2003).

These figures are likely to be inaccurate given the nature of broad household surveys, where respondents may be dishonest about behaviours that may be stigmatized or disapproved of in certain communities and where inadequate attention may be given to setting respondents at ease when they are asked sensitive questions (Gfroerer, Wright & Kopstein, 1997). Female drinking, in particular, is often disapproved of in many African communities and, as a result, is likely to be under-reported (Mphi, 1994; Siegfried, Parry, Morojele & Wason, 2001).

Pengpid, Peltzer and Van der Heever (2011) assessed the prevalence of alcohol use and associated factors among outpatients in an urban hospital in South Africa, and their study found that 41.2% of the men and 18.3% of the women were hazardous drinkers. In a sample of 1,532 selected patients, 3.6% of the men and 1.4% of the women met the criteria for probable alcohol dependence or harmful drinking. Globally, the prevalence of alcohol use is estimated to range from 4% to 29% for hazardous drinking and from less than 1% to 10% for harmful drinking (Reid, Feilin & O'Connor, 1999). Similar prevalence rates of hazardous or harmful alcohol use in health care settings have been reported from various African countries (Saunders, Aasland, Amusend & Grant, 1993; Chinyadza, Moyo, Katsumbe, Chisvo, Mahari, Cock & Mbengeranwa, 1993; Abiodun, 1996; Bekker & Van Vekden, 2003; Peltzer, 2006; Ward, Mertens, Flisher, Bresick, Sterling, Little & Weisner, 2008).

2.3. PREVALENCE OF ALCOHOL CONSUMPTION INTERNATIONALLY

Previous research in Australia found that 10% of people drank at levels considered to be harmful for long-term health, 7% at 'risky' levels, and 3% at 'high risk' levels. Twenty per cent of the people put themselves at risk of alcohol-related harm in the short term. Seventeen-and-a-half per cent of people had not consumed alcohol in the previous 12 months (Laslett, Room, Ferris, Wilkinson, Livingston & Mugavin, 2011).

In the USA the prevalence of alcohol use by adults over 18 years of age who were regular drinkers was found to be 50.9%. Among those who were infrequent drinkers and 18 years and above, the prevalence was 13.6% (National Health Interview Survey, 2012).

2.4. ALCOHOL USE GLOBALLY

According to the World Health Organization (2002), in 2000, the global burden of alcohol use in terms of death and disability was between 1.6% (for high-mortality developing countries) and 9.2% (for developed regions) of total Disability Adjusted Life Years lost (DALYs), accounting for 4.5 billion years lost. While South Africa is a high-mortality developing country, it has

recently been calculated that alcohol-related harm accounted for 7.1% of all deaths and 7.0% of Disability Adjusted Life Years Lost (DALYs) in 2000, resulting in 1.1 million life years lost in that year (Schneider, Norman, Parry, Plüddemann & Bradshaw, 2007). Alcohol was the third largest contributor to death and disability after unsafe sex/sexually transmitted infections and interpersonal violence. The three largest contributors to the burden specifically related to alcohol, included homicide and violence (40% of alcohol's burden), alcohol use disorder (15%) and road traffic injuries (15%).

It has been estimated that South African adult per capita alcohol consumption in 2005 was between 10.3 and 12.4 litres of pure alcohol. Of this consumption, 2.5 litres per person was homebrewed and illegally produced alcohol (Rehm, Room, Monteiro, Gmel, Graham, Rehn, Sempos, Frick & Jernigan, 2004). According to the World Health Organization (2002), 45% of men and 70% of women in Afro Region E (which includes countries like Ethiopia and South Africa) abstain from drinking alcohol. Therefore, while the consumption per adult is only 7.1 litres of pure alcohol in this region, consumption per adult is 16.7 litres per year (Rehm, Rehn, Room, Monterio, Gmel, Jernigan & Frick, 2003). It has been estimated that per capita consumption among drinkers in South Africa is likely to be even higher than the regional average (Parry, 2005). This gives South Africa one of the highest levels of alcohol consumption per drinker anywhere in the world, putting it at a similar level as countries such as the UK and the Ukraine (Rehm, *et al*., 2003).

Rehm, *et al*., (2003) indicate that the increased consumption of alcohol or heavy drinking is an important risk factor for many health problems and is thus a major contributor to the global burden of disease. According to the 2009 WHO report, the detrimental impact of alcohol was the third on the burden of disease and injury after unsafe sex and childhood underweight status. It exceeded that of many classic risk factors such as unsafe water and sanitation, hypertension, high cholesterol or the use of tobacco (WHO, 2009). Alcohol consumption has been identified as an important risk factor for illness, disability and mortality (Rehm, *et al*., 2004). In 1996, it was reported that in Australia excessive alcohol was responsible for 4.9% of the burden of disease.

Rehm, *et al*., (2003) has argued that alcohol consumption can be a direct cause or a partial cause of the following conditions and incidents:

- Cirrhosis of the liver;
- Infectious diseases;
- Diabetes;
- Pancreatitis;
- Unintentional and intentional injuries;
- Breast, oral, liver and colorectal cancers;
- Stroke, inflammatory heart disease and hypertension;
- Road traffic accidents;
- Memory lapse;
- Falling, suicide, and drowning.

2.5. ALCOHOL USE IN SOUTH AFRICA

The guidelines provided by the Food-based Dietary Guidelines (FBDGs) in South Africa include references to alcohol. The FBDG on alcohol intends to make a contribution towards encouraging those members of the South African population who misuse alcohol, particularly by binge drinking, to partake of low-risk drinking or sensible drinking. Low-risk drinking is defined (using Australian guidelines) as no more than four units of alcohol per day for men and no more than two units for women, with at least two alcohol-free days per week (Van Heerden & Parry, 2001).

South Africans consume well over 5 billion litres of alcoholic beverages per year. The figure could be nearer to 6 billion litres, depending on the estimate of the amount of sorghum beer consumed. Roughly two thirds of the total alcohol consumed in South Africa is malt or sorghum beer. In terms of alcoholic beverages this translates to roughly 4.2 billion litres or roughly 90%

of the alcoholic beverages consumed. Roughly 15% of the total alcohol consumed is wine (Myers & Parry, 2002).

Per capita consumption of alcohol in South Africa is between nine and ten litres per year, which places the country among the higher alcohol consuming nations. Since 1993 the level of per capita adult alcohol consumption appears to have been rising, after a decrease in 1990 and 1991 (Myers & Parry, 2002).

Based on the findings of the Department of Health's South African Demographic and Health Survey (SADHS) conducted in 1998 by the Medical Research Council (1998), just under half of men (45%) and one-fifth of women (17%), 15 years and older, reported that they consumed alcohol. For both sexes, the rate was 28%, which translates to 8.3 million South Africans who were 15 years or older. For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year group.

Risky drinking was defined as drinking five or more standard drinks per day for men and three or more drinks per day for women. While communal drinking is often also risky, respondents who reported communal drinking in the Medical Research Council (MRC) study were not classified as 'risky drinkers'. Rates of risky drinking for males and females were very similar and were roughly 4-5 times greater during weekends than on weekdays, with one-third of current drinkers drinking at risky levels over weekends. For both males and females, risky drinking at weekends appears to be highest among persons in the middle categories for ages 35-44 years for males and 45-54 years for females. Seven per cent of pregnant women acknowledged current drinking (MRC, 1998).

2.6. THEORETICAL PERSPECTIVES ON DRINKING PROBLEMS

There are many theories that can be used to explain behaviour related to alcohol consumption. Some of those theories are based on the psychological explanations of drinking behaviour while others are more medically based. For the purpose of this study, only three psychology based theories will be discussed in this section as the conceptualization of this study.

2.6.1. Social learning theory

The social learning theory is based on the idea that people behave the way they do largely because they have learned to behave in that way. According to the social learning theory, learning can take place on a number of levels with conditioning at one extreme and abstract thought and reflection at the other (Heather & Robertson, 1997). Classical conditioning as a way of learning happens this way: an unconditional stimulus produces an unconditioned response, and then a neutral stimulus is presented shortly before the unconditioned response. After this has happened several times, the neutral stimulus comes to have an effect similar to the unconditioned stimulus; it produces a similar response.

Conditioning plays an important part in behaviour (Heather & Robertson, 1997). Research shows that learning has a great effect on the development of harmful drinking behaviour. People learn how to drink, what to expect from drinking and to use drinking for certain purposes. People who have experienced rules about appropriate drinking learn those rules and rituals (although they may not always use what they have learned). Those who see mostly uncontrolled drinking with the intention of intoxication learn to drink that way (Heather & Robertson, 1997).

In instrumental learning, learning is strengthened each time a response is followed by satisfying consequences. Acts that are reinforced tend to be repeated. People are also shaped by the consequences of drinking. Human beings continue to behave in certain ways if they get positive consequences for the behaviour. If a person's social group drinks heavily and that person receives positive feedback from friends for drinking the same way, he or she will be more likely

to continue the pattern. If a person gets other rewards from drinking, for example, being more social or being less anxious he or she may also learn to use alcohol as a way of getting that reward and as a way of coping with uncomfortable and painful feelings. These positive consequences may be more emotionally powerful than negative ones like hangovers or family problems (Coon & Mitterer, 2012).

Modelling, as a way of learning, happens through observing the behaviour of others. In terms of alcohol consumption parents serve as models of behaviour for their offspring. Children imitate the patterns of behaviour set by their parents, whether it is abstinence, moderate drinking or heavy drinking (Herd, 1994; Windle, 2000). Parents are the agents by whom adolescents learn appropriate or inappropriate norms and values related to alcohol use (Herd, 1994). This theoretical construct has particular significance for explaining patterns of initiation into alcohol use, where the parent often serves as the first model of drinking behaviour. Often, an individual's first experience with alcohol occurs in the family setting, providing parents with the opportunity to moderate the child's interpretation of the meaning of alcohol use (Anderson, Bruijn, Angus, Gordon & Hastings, 2009). In addition, Tyler (2008) found that patterns of excessive alcohol use in parents influence children to a greater extent earlier in adolescence, before the influence of peers grows; first experiences with alcohol and initiation into its use are related to models of parental use acquired through social learning.

2.6.2. Psychosocial theories

All experts, including those who believe in the disease model, agree that psychological, social and environmental events are important elements in the development of problem drinking patterns (Heather & Robertson, 1997).

Habit is a learned element of drinking. People learn to use alcohol in certain situations, including developing the habit of drinking heavily. In the North, for example, people may learn the habit of drinking heavily each time they go to the bar, whereas they might not drink at all otherwise. Habit can be hard to change because it is a routine that people have developed without really thinking about it, a way of behaving that has become an automatic reaction. There is much

research that shows that if a person expects to be affected by alcohol in a certain way, she/he will in fact experience that effect (Heather & Robertson, 1997).

There have been experiments showing that even if people are drinking non-alcoholic drinks they can feel intoxicated (that is, they behave as if they are intoxicated and believe that they are intoxicated), if they believe that they are drinking alcohol. The behaviour that people expect alcohol to produce will consequently be the way they will behave. However, most people do not consciously realise that their beliefs influence their behaviour. Also, if people believe and expect that intoxication is a normal part of drinking, they may well drink to intoxication. If they believe they have no control over alcohol once they have a drink, they may well drink in an uncontrolled way. If people expect alcohol to lead to aggression, they may well act aggressively. Many studies show that alcohol-related violence is a learned behaviour, not a universal and automatic result of heavy drinking (Heather, 1995).

Alcohol may, however, make people less able to control anger and aggression. Cultures/societies develop attitudes, beliefs, expectations of effects and standards about alcohol use, as well as ways of discouraging unacceptable use (Graham, Leonard, Room, Wild, Pihl, Bois & Single, 1998). Penalties can be legal such as making drunk driving a criminal offence. They can also be less structured, but highly effective negative consequences like social shunning and gossip. The greatest problems seem to arise when a society tolerates heavy drinking and drunkenness rather than having strong clear rules about acceptable and unacceptable drinking behaviour and meaningful punishments (Parry, *et al.*, 2004).

Subcultures are smaller groups within the main society, for example, teenagers, friendship groups, or church members. Subcultures can also develop their own attitudes, rules, and expectations about drinking. For example, heavy binge drinking is often seen as normal and acceptable by college students. However, people who belong to religious groups that have strict rules against alcohol do not accept drinking at all (Parry, *et al.*, 2004).

Some people with certain personality characteristics and in certain environmental circumstances may be at greater risk of developing alcohol problems. For example:

• Certain mental disorders (e.g., anxiety, depression) may be more likely to lead to harmful alcohol use;

• People who have antisocial personalities (that is, they are aggressive, do not follow the rules of society, do not take responsibility for what they do, do not relate well to other people, etc.) are more likely to abuse alcohol;

• People whose social group drinks heavily may develop problems themselves;

• Highly stressful life events like isolation, violence and abuse may create a greater risk of alcohol abuse as a coping method.

Research also shows that "substance abuse frequently occurs within a social context characterized by social and economic disadvantage" (Parry, 2000). That is, people more often drink in problematic ways in situations of poverty and unemployment, low education level, unstable family conditions, unstable social environments, and lack of resources and supports. The connections between alcohol abuse and these other factors that affect health are complex. However, it is likely that when individuals do not have the tools to make a meaningful life, or feel a lack of secure rootedness in family and society, and/or do not have a sense of direction for a positive future, they may learn to use alcohol as a coping tool. This alcohol misuse then creates even more problems. To a great extent, then, alcohol misuse and problems arise out of personal psychological factors, learned social patterns, the rewards a person gets from drinking, and the person's expectations. Harmful and disadvantaged environmental, economic and social conditions increase the likelihood that people will develop problems (Parry, 2000; Kushner, Abrams & Borchadt, 2000; Jané-Llopis & Matytsina, 2006).

2.6.3. Harm Reduction Model

The harm reduction approach takes the holistic view that the essential goal of helping should be to decrease the "health and social problems associated with the use and control of alcohol and other drugs among all individuals, families and communities" (Marlatt, Larimer, Baer &

Quigley, 1993). It is a public health approach. Its goal is not necessarily to stop people from drinking, but to teach them how to drink without creating physical, legal, financial, or social problems for themselves and others. Harm reduction is not one particular strategy. It encompasses a variety of methods to help individuals control their drinking or their desire to drink. It includes counselling for other client issues either directly or through referrals to other care providers.

Abstinence is not a requirement in harm reduction methods, but it is always presented as an option. It is a fact that alcohol provides pleasure in many ways and most people either do not want to quit drinking completely, or they have mixed feelings. It is also a fact that some people simply should not drink at all, either temporarily (e.g., during illness, pregnancy, or if they are on medications, etc.) or permanently (e.g., those who have developed serious alcohol dependency). The harm reduction approach believes clients cannot be forced to do something they do not want to do, they have a right to choose what they want, and a reduction in problems is better than no change at all (Marlatt & Witkiewitz, 2002).

The counsellor does not take the position of being the authority telling clients what to do. Instead, the counsellor sets up a respectful and collaborative relationship that acknowledges clients' rights to participation, control, and ownership of their life decisions. Therefore, the counsellor helps clients determine what kind of change they want to accomplish (a specific cut-back level or abstinence) and then provides ideas and activities for reaching the goal. Clients' goals may change and their plans may change. There is much evidence that when people are allowed to make their own choices, quite a few in fact choose abstinence, sometimes immediately, sometimes later on. Furthermore, they will be more successful because they will be more committed to the goal. This is true in many areas of life. When people are ordered to do something, they may resist. Harm reduction methods are also extremely useful in treatment aftercare, and in helping clients manage drinking triggers and psychological habits (Marlatt, Blume & Parks, 2001).

Some people question the harm reduction approach. They believe that if alcohol abusers are told they can learn to control their drinking, it will lead to increased drinking and eventually the development of dependence. However, all the evidence shows just the opposite. Harm reduction can be highly successful in helping those with alcohol abuse disorders to reduce their drinking to levels that create no problems or at least fewer problems (Marlatt, *et al.*, 1993; National Institute for Alcohol Abuse and Alcoholism, 2000). It has also been shown to be a useful middle step in helping alcohol dependent people become abstinent. People trying to change heavy drinking patterns or achieve abstinence are not often immediately successful. It can take time and several attempts. Harm reduction provides a less stressful, less guilt-producing path to change while reducing community, family, and individual physical and mental harm. Harm reduction has been shown to be a powerful tool for change, but it must be presented appropriately (Marlatt & Witkiewitz, 2002).

It is not enough merely to tell people to cut down on their drinking or to stay away from alcohol. Alcohol misuse is not an isolated behaviour. Effective harm reduction counselling is a holistic process that helps people look at their whole lives and the role alcohol plays (Marlatt, Blume & Parks, 2001). Areas to be considered include the following:

- Assessing drinking levels and the possible future consequences of the risky drinking;
- Assessing readiness to change;
- Looking at underlying factors in harmful drinking (e.g., drinking cues or triggers, self-esteem, family problems, past trauma, etc.);
- Analysing the benefits and problems of current drinking;
- Setting goals;
- Preparing for possible positive and negative consequences of change;
- Monitoring/managing drinking behaviour and/or the desire to drink;
- Learning new ways of handling problems, dealing with emotions, relating to others, finding peace, getting what one wants, etc.

A longer period of such outpatient treatment (e.g. 10 to 12 sessions) may be necessary for those with serious alcohol and/or personal problems.

2.6.4. Motivational interview

Why does one session of basic advice work with some people and intensive treatment (even with aftercare) not work with others? Alcohol misuse is resistant to change. Evidence suggests that a person's readiness to change is a major factor in success. No change is possible unless the person acknowledges a problem and wants to do something about it. As in other areas of life, people change only when they have decided there is a need to change. Experts agree that empathic (understanding) motivational interviewing is an effective treatment tool that helps clients come to their own realization of negative consequences and the need for change (Baer, Roserngren, Dunn, Wells, Olge & Hartzler, 2003).

One model increasingly used by many alcohol treatment programmes is the Stages of Change model. This model was originally developed more than 20 years ago to help people stop smoking, but has been found to be an effective tool in many kinds of change. This approach looks at behaviour change as a process that depends on the person's thinking about alcohol use and problems.

Five steps of change according to Prochaska's motivational interview

• Pre-contemplation

During this stage, the person might have some awareness and concern about his/her excessive/inappropriate drinking, but does not really acknowledge that there is a problem. For example, bosses or family may have said something or the person may have been involved in a fight while drunk, etc. She/he may think about changing sometime, but not in any definite way. Counsellors at this stage gently help the client to come to the conclusion that perhaps there is a reason to change (Prochaska, DiClemente & Norcross, 1992).

• Contemplation

The person decides to do something about his/her drinking, although there are probably mixed feelings. The person may be determined that she/he will change, but not yet. At this point, the person will be more willing to discuss the pros and cons and options. Counselling focuses on helping this person to see the negative consequences of drinking alcohol that are already there in his/her life (Prochaska, *et al.*, 1992).

• Preparation

The person makes an active decision and commitment to change. The counsellor helps the client gather information, assesses options and considers positive and negative consequences of each option. This is an important stage because this is the beginning of a plan. The plan must be based on sufficient information and on the client's needs.

• Action

At this stage the person is fully committed and begins the plan to cut down alcohol consumption or stop drinking. The person uses strategies that will lead to the achievement of the goals set.

• Maintenance

The person is following the plan and uses strategies to stay on track. The person practises the new strategies to help him/her to stay on track.

• Relapse

As new habits do not come easily, most people will probably fall back into earlier patterns at least occasionally. It is important to help them understand that they may get off track, but they can plan how to get back on track. Relapses are excellent learning situations for examining what led this to happen and what can be done the next time to prevent it from happening again. People

may go back and forth between stages several times before a change is complete. They should simply be helped to work through the issues and move on again (Prochaska, *et al.*, 1992).

Principles of motivational interview

Miller and Rollnick (2002) describe four main principles that are essential in motivational interviewing as follows:

• Expressing empathy:

A counsellor must express empathy as it helps build a trusting relationship (respect, acceptance of what the client says and how she/he sees things, understanding of feelings and circumstances, encouragement of expression of thoughts and feelings, without counsellor judgment).

• Developing discrepancy:

The counsellor helps clients who believe they do not have a problem to see that the belief does not fit with the facts of their lives. For example, the client may say that alcohol is not a problem or that he has a job, his girlfriend does not mind his drinking, etc. At the same time he might also mention that he is off work for a couple of days a week because of hangovers and that he and his girlfriend have been arguing a lot. This contradicts the first statements, but at this point the counsellor would ask some non-confrontational questions related to those events, which encourages the client to think about the situations and the possible role of alcohol. However, the client needs to make the connections her/himself, not the counsellor.

• Rolling with resistance:

If the client denies problems even though they may be obvious, or resists reviewing her/his behaviour, the counsellor should not argue. Instead, the counsellor should eventually, gently turn that resistance back in a way that gets the client thinking again. For example, "OK, I know what you're saying. But there's something you mentioned last time that I don't understand. . . . Can you tell me more about . . . ?"

• Supporting self-efficacy: The counsellor should always make it clear that clients have the ability to make the changes they want, have control over their lives and have personal strengths and resources that make them capable. The counsellor believes in the client and the client learns to believe in him/herself.

Once clients themselves have decided that they may need to do something about their problem, the counsellor and client can move to the next stage which is making a plan. Motivational interviewing is an important part of all helping strategies, from brief counselling to residential treatment (Fleming, Barry, Manwell, Johnson & London, 1997).

2.6.5. Health belief model

The Heath Belief Model (HBM) is commonly used in health education and health promotion (Glanz, Rimer & Lewis, 2002). It was developed in the 1950s in an effort to explain why screening programmes offered by the U.S Public health Service, especially for tuberculosis, were not very successful (Hochbaum, 1958). The model propositions that health-seeking behaviour is influenced by a person's perception of a threat posed by a health problem and the value associated with actions aimed at decreasing the risk (Hochbaum, 1958). Personal perception is influenced by a wide range of interpersonal factors affecting behaviour.

The Health Belief Model has four main hypotheses, namely perceived seriousness, perceived susceptibility, perceived benefits and perceived barriers (Glanz, Rimer & Lewis, 2002). Each of these hypotheses may be used on its own or combined with others to explain behaviour. The model was further modified to include cues to action, motivating factors and self-efficacy.

<u>Perceived seriousness</u> explains how an individual either changes or maintains a detrimental behaviour based on how serious they believe the consequences of maintaining the behaviour are.

This perception is either based on medical information or personal beliefs about the consequences of the behaviour if it is not changed.

The greater the perceived risk, the greater the likelihood of engaging in risk-reducing behaviour; this is termed perceived susceptibility. If individuals recognize that their behaviour when they are under the influence of alcohol makes them vulnerable to many health hazards, they would try to engage in risk-reducing behaviour. However, if an individual does not believe that their behaviour is risky, the chances are that the individual will continue indulging in risky behaviour. When perceived seriousness is combined with perceived susceptibility, good health behaviour is promoted (Glanz, Rimer & Lewis, 2002).

The next hypothesis is perceived benefits. This is a personal opinion of the value of a new behaviour in decreasing the risk of contracting a disease. New health behaviour might be adopted if, by doing so, one perceives that it will reduce one's risk of developing a disease. If an individual perceives that reducing the amount of alcohol they take, avoiding certain places which may trigger alcohol consumption or even deciding to stop drinking altogether will reduce his/her risk of experiencing problems arising from his/her drinking behaviour; the chances are that he/she will change their behaviour (Glanz, Rimer & Lewis, 2002).

Perceived barriers are an individual's appraisal of the stumbling blocks that are in the way of adopting new health behaviour. For instance, a female student who lives in a university residence where other students perpetually host parties may perceive that as a barrier to her changing her drinking habits. To adopt healthy behaviour, one has to believe that the benefits outweigh the consequences of continuing with the old risky behaviour (Centre for Disease Control and Prevention, 2004).

Modifying variables, such as culture, education level, skill, motivation and previous experiences, were added to the four hypotheses. These are the characteristics of an individual that influence personal views. Previous experiences increase the perception of vulnerability as one would be

aware of exposure to risk. They may also reduce one's perception of the seriousness of the behaviour because the consequences were dealt with easily (Glanz, Rimer & Lewis, 2002).

Cues to action are events, people or things which motivate people to act or change behaviour. These include a reminder by a family member, mass media campaigns (Graham, 2002) and advice from others (Ali, 2002). Specifically, significant others who constantly remind individuals about their behaviour or reproach the use of alcohol, or posters warning the public of the dangers of alcohol abuse serve as cues to action.

Self-efficacy occurs when one believes that one is able to accomplish something (Bandura, 1977). Bandura proposes that, generally, individuals do not engage in a new experience unless they believe that they can go through with it. An individual may believe that changing his or her behaviour will be beneficial. However, if their perception of potential barriers is greater than that of perceived benefits, they will probably not adopt new behaviour.

2.7. CONCEPTUALIZATION OF ALCOHOL CONSUMPTION

Drink	Volume	% of alcohol in a drink	Units of alcohol
Can of lager or cider	340 ml	5%	1 unit
Glass of wine	120 ml	12%	1 unit
A single tot of spirits(whisky, gin or vodka	25 ml	43%	1 unit
A small glass of liqueur or aperitif	25 ml	30 %	1 unit
Cartoon of ordinary commercial sorghum beer	500ml	3%	1 unit

Table 2.1: Description of alcoholic beverages

2.7.1. Categories of alcohol drinkers

According to WHO (2000) there are different categories of alcohol drinkers ranging from those who drink safely and sensibly to those who are dependent on alcohol. These categories depend on the quantity of alcohol consumed and the frequency of drinking. These categories will be discussed below.

2.7.1.1. Safe and sensible drinking

Sensible drinking is defined by WHO (2000) as the consumption of alcohol, while still remaining\ in control of one's own body, mind and behaviour. People who fall under this category drink only a limited amount of alcohol and do not drink every day. Sensible drinking for men is four units of alcohol per occasion, and three units for women on one occasion as per the table above. It is advisable not to drink at all in the following situations:

- When pregnant or breast feeding;
- When very tired;
- When food has not been consumed for several hours;
- When driving and operating machinery;
- When taking medicine;
- If one is not in control of one's drinking.

2.7.1.2. Low risk drinking

The social drinker consumes alcohol in amounts and circumstances that appear socially acceptable. However, this person may develop a serious alcohol problem if there is an inclination to over-indulge or occasionally to use alcohol to cope with stress (Edwards, Marshall & Cook, 1997).

2.7.1.3. Harmful drinking

Harmful drinking is drinking alcohol that results in adverse effects; for example, physical or psychological harm. Harmful drinkers consume alcohol above the recommended daily, weekly, or per-occasion amounts; that is, more than three standard drinks for men and more than two standard drinks for women and all above 65 years of age.

The harmful drinker drinks in socially appropriate circumstances, but actively seeks an occasion for drinking in a social situation. He or she has more than two drinks every day, continuously seeks out situations in which to drink, and may often over-consume but not exceed the alcohol consumed by her/his peers. He or she may never appear drunk or seem to be affected in social or work routines, but as drinking escalates, it becomes increasingly linked to seeking physical or psychological relief. Problem drinkers emerge from this population. Neither the person nor his/her acquaintances suspect an alcohol abuse problem (Edwards, *et al.*, 1997).

2.7.1.4. Hazardous drinking

Harmful drinking is the consumption of alcohol that places a person at risk for adverse health effects. Alcohol consumption is associated with social consequences such as problems with family, fighting and financial problems. Most people who experience alcohol-related problems have mild to moderate problems. These people are unlikely to meet diagnostic criteria for severe alcohol dependence or alcoholism, despite their frequent drinking and occasional negative consequences from drinking. The majority of these groups are more appropriately classified as problem drinkers (Burge & Schneider, 1999).

The problem drinker gets drunk on occasion and also exhibits medical, legal, social or psychological consequences of excessive alcohol consumption; and makes or thinks of making attempts at cutting down or quitting. Functioning may vary from seemingly intact behaviour to difficulty in coping. The drinker may deny a drinking problem and attribute blame to external events or persons. Denial is common even among those with multiple arrests for drunken driving (Edwards, *et al.*, 1997).

2.7.1.5. Alcohol dependence

The alcohol-dependent drinker tries to consume the same excessive amount of alcohol regardless of mood situation, although external circumstances might constrain drinking for a time. Most continue to work, some even in high positions. Alcohol is given top priority in all situations; for example, one goes to a party to drink, not to socialize. Tolerance to alcohol develops, and withdrawal symptoms may be noted during the workday when the blood alcohol level drops. Drinking at lunch and during the cocktail hour is needed to relieve symptoms. The patient is aware of the compulsion to drink but is difficult to reach unless family or the employer notes that there is a problem or serious medical complications develop (Edwards, *et al.*, 1997).

2.7.1.6. Severely alcohol dependency

This is a severely deteriorated drinker who maintains a constant state of intoxication; has no care for his or her person or surroundings; undergoes periodic hospitalization for detoxification and for medical care necessary after alcohol-related trauma or organ damage (Edwards, *et al*., 1997).

2.7.2. The role of alcohol in South African history

During pre-colonial days, the consumption of alcohol was preserved for elders, and other senior or authority figures, including health practitioners and healers. Solitary drinking was not tolerated. Drinking did not occur every day but only on special occasions such as religious feasts, funerals and marriage ceremonies. Drinking was less common among youth and women of childbearing age. These were only allowed to drink only when engaging in rituals and religious ceremonies (Gumede, 1995). Traditionally in South Africa, alcohol served many purposes. It was used as a means of payment, and for strengthening friendships, and was associated with manhood and the strengthening of the body (Setlalentoa, Pisa, Thekisho, Ryke & Loots, 2010).

Since then alcohol has been prominent in South Africa, both socially and politically. Women used to cultivate maize and sorghum to produce food and ferment beer. Traditional African beer played an important role in the lives of black people of South Africa, both culturally and religiously. People would drink alcohol when traditional ceremonies and feasts were held

(Gumede, 1995). According to Gumede (1995), two feasts recorded in the history of black people are the feast of the first fruits (Umkhosi Wokweshwana) which took place after the first harvest, and the festival of the Queen of the Rainbow (Umkhosika Nonkhubulwana) involved the consumption of low alcohol content beer. These feasts were celebrated by women after the first rainfall.

Gumede (1995) argues that the British colonial government prohibited drinking among non-white population groups as it believed that alcohol caused social decay and disorder among blacks. With the arrival of European liquor called “Cape Smoke”, Africans began to move away from traditional African beer to liquor. This was seen as unacceptable by European farmers because they believed alcohol made Africans disobedient. The disobedience was displayed when workers were under the influence of liquor. They no longer took orders, would not come to work, and would even talk back to their employers. This led to many laws being passed to control drinking by Africans.

Among white South Africans, malt, beer and wine were popular drinks, particularly during mealtimes and social functions such as weddings, communion at church (wine) and sporting events. To black South Africans, among many, alcohol is still a symbol of personal and economic freedom (Gumede, 1995).

During modern times, drinking is widespread among different members of the community. With the laws/controls that regulated production, and the sale and access to alcohol by Africans led to the eruption of illegal liquor outlets, such as shebeens. These are private homes where alcohol is brewed, sold and consumed. The informal/illegal liquor sector in South Africa is not regulated and operates outside the law. It comprises hundreds of small home brewers of sorghum beer. The informal liquor sector also consists of as many as 200 000 liquor outlets, largely shebeens. In South Africa, the alcohol industry is a major source of employment and government revenue (Gumede, 1995; Parry & Bennets, 1998; Setlalentoa, *et al*., 2010).

2.8. CAUSES OF DRINKING PROBLEMS

Drinking behaviour, and the problems with which it is associated, are determined by multiple, interacting factors that concern both an individual and his or her environment. Those factors will be discussed in the following section.

Research shows that many adolescents start to drink at very young ages. In 2003, the average age of first use of alcohol was about fourteen, compared to about seventeen-and-a half in 1965 (Newes-Adeyi, Chen, Williams & Faden, 2005; SAMHSA, 2003). People who reported starting to drink before the age of 15 were also four times more likely to report meeting the criteria for alcohol dependence at some point in their lives (Grant & Dawson, 2003). In fact, new research shows that the serious drinking problems (including what is called alcoholism) typically associated with middle age, actually begin to appear much earlier, during young adulthood and even during adolescence.

As children move from adolescence to young adulthood, they encounter dramatic physical, emotional, and lifestyle changes. Developmental transitions, such as puberty and increasing independence, have been associated with alcohol use. So in a sense, just being an adolescent may be a key risk factor not only for starting to drink, but also for drinking dangerously (Newes-Adeyi, *et al.*, 2005).

2.8.1. Risk-Taking

Research shows that the brain keeps developing well into the twenties, during which time it continues to establish important communication connections and further refines its function. Scientists believe that this lengthy developmental period may help explain some of the behaviour which is characteristic of adolescence; for example, their tendency to seek out new and potentially dangerous situations. For some teens, thrill-seeking might include experimenting with alcohol. Developmental changes also offer a possible physiological explanation for why teens act so impulsively, often not recognising that their actions, such as drinking, have consequences (Grant & Dawson, 1998).

2.8.2. Expectancies

How people view alcohol and its effects also influences their drinking behaviour, including whether they begin to drink and how much they drink. An adolescent who expects drinking to be a pleasurable experience is more likely to drink than one who does not. An important area of alcohol research is focusing on how expectancy influences drinking patterns from childhood through adolescence and into young adulthood (Lang & Strizke, 1993; Smith, Goldman, Greenbaum & Christiansen, 1995; Zucker, Kincaid, Fitzgerald & Bingham, 1995; Dunn & Goldman, 1996). Beliefs about alcohol are established very early in life, even before the child begins elementary school (Noll, Zucker & Greenberg, 1990). Before age 9, children generally view alcohol negatively and see drinking as bad, with adverse effects. By about age 13, however, their expectancies shift, becoming more positive (Dunn & Goldman, 1996; Dunn & Goldman, 1998). As would be expected, adolescents who drink the most, also place the greatest emphasis on the positive and arousing effects of alcohol.

2.8.3. Sensitivity and tolerance to alcohol

Differences between the adult brain and the brain of the maturing adolescent may also help to explain why many young drinkers are able to consume much larger amounts of alcohol than adults (Johnston, O'Malley & Bachman, 2003) before experiencing the negative consequences of drinking, such as drowsiness, lack of coordination, and withdrawal/hangover effects (Spear, 2000; Spear & Varlinskaya, 2005). This unusual tolerance may help to explain the high rates of binge drinking among young adults. At the same time, adolescents appear to be particularly sensitive to the positive effects of drinking, such as feeling more at ease in social situations. Young people may drink more than adults because of these positive social experiences (Spear, 2000; Spear & Varlinskaya, 2005).

2.8.4. Personality characteristics and psychiatric comorbidity

Children who begin to drink at a very early age (before age 12) often share similar personality characteristics that may make them more likely to start drinking. Young people who are disruptive, hyperactive and aggressive are often referred to as having conduct problems or being

antisocial. Those who are depressed, withdrawn, or anxious may be at the greatest risk of developing alcohol problems (Zucker, Wong, Puttler & Fitzgerald, 2003). Other behaviour problems associated with alcohol use include rebelliousness (Brook, Whiteman, Finch & Cohen, 1995), difficulty avoiding harm or harmful situations (Jones & Heaven, 1998), and a host of other traits seen in young people who act without regard for rules or the feelings of others. This is known as dis-inhibition (Moss & Kirisci, 1995; Colder & Chassin, 1997; Colder & O'Connor, 2002).

2.8.5. Hereditary factors

A strong family history of alcohol-related disorders indicates a vulnerability to alcohol-use disorder. About 40-60 % of the risk is explained by genetic factors and the remainder is a combination of genetic factors and the environment (Rodseth, 2012). Some of the behavioural and physiological factors that converge to increase or decrease a person's risk of developing alcohol problems, including tolerance to alcohol's effects, may be directly linked to genetics. For example, being a child of an alcoholic or having several alcoholic family members places a person at greater risk of developing alcohol problems. Children of alcoholics (COAs) are between four and ten times more likely to become alcoholics themselves than are children who have no close relatives with alcoholism (Russell, 1990). COAs also are more likely to begin drinking at a young age (Donovan, 2004) and to progress to developing drinking problems more quickly (Grant & Dawson, 1998).

Research shows that COAs may have subtle brain differences, which could be markers for developing later alcohol problems (Tapert & Schweinsburg, 2005). Using high-tech brain-imaging techniques, scientists have found that COAs have a distinctive feature in one brainwave pattern (called a P300 response) that could be a marker for later alcoholism risk (Hill & Steinhauer, 1993).

Some studies suggest that these brain differences may be particularly evident in people who also have certain behavioural traits, such as signs of conduct disorder, antisocial personality disorder,

sensation-seeking, or poor impulse control (Tarter, Altermen & Edwards, 1985; Schuckit & Smith, 1997; Schuckit, 1998; Bauer & Hesselbrock, 1999a; Bauer & Hesselbrock, 1999b). Studying how the brain's structure and function translates to behaviour will help researchers to better understand how pre-drinking risk factors shape later alcohol use; for example, does a person who is depressed drink to alleviate his or her depression, or does drinking lead to changes in his brain that result in feelings of depression?

Studies have confirmed that there is a genetic component to a drinking behaviour and drinking problems, in addition to the undeniably important influences of the environment (Brook, *et al.*, 1995; Parry & Bennets, 1998; Botvin & Kantor, 2000). Behaviour such as alcohol consumption cannot be totally understood on the basis of genes or environment alone. Instead, it must be seen as the product of the interaction between a variety of genetic and environmental influences. The individual is more or less predisposed to heavy drinking, or to a particular alcohol-related problem or to become depend upon alcohol. This level of predisposition determines the risk or the probability of being a heavy drinker or of suffering from a particular drinking related problem (Edwards, *et al.*, 1997; Parry, *et al.*, 2004).

2.8.6. Environmental Aspects

Drinking behaviour reflects a complex interplay between inherited and environmental factors. The implications of environmental factors in causing alcohol drinking are only beginning to be explored in adolescence (Rose, Dick, Vicken & Kaprio, 2001). What influences drinking at one age may not have the same impact at another. As Rose, Dick, Viken & Kaprio (2001) show, genetic factors appear to have more influence on adolescent drinking behaviour in late adolescence than in mid-adolescence.

Environmental factors, such as the influence of parents and peers, also play a role in alcohol use (Halpern-Felsher & Biehl, 2004). For example, parents who drink more and who view drinking favourably may have children who drink more, and an adolescent girl with an older or adult boyfriend is more likely to use alcohol and other drugs and to engage in delinquent behaviour.

Researchers have examined other environmental influences as well, such as the impact of the media (Saffer, 1996; Parry, 2002). Today, alcohol is widely available and aggressively promoted through television, radio, billboards, and the Internet. Researchers have studied how young people react to these advertisements (Tibbs & Parry, 1994; Parry, 2002). In a study of learners in Grades 3, 6 and 9, those who found alcohol advertisements desirable were more likely to view drinking positively and to want to purchase products with alcohol logos (Austin & Knaus, 2000). Research results are inconclusive, however, on whether these positive views of alcohol actually lead to underage drinking.

2.8.7. Political and economic factors

Some political and economic circumstances, like reducing the real price of alcohol, tend to increase the overall consumption of alcohol by the population (Parry, 2005). Similarly, measures which make alcohol more readily available by reducing restrictions on its supply also tend to increase consumption. Thus, major influences upon per capita consumption in a population include factors amenable to political manipulation, such as taxation, licensing laws and trade agreements. Manipulation of such influences can have an enormous impact on the level of alcohol consumption of a population. Conversely, failure to utilize such controls can allow alcohol consumption to escalate and related problems to reach epidemic proportions (Edwards, *et al*., 1997; Parry, 2005).

2.8.8. Socio-cultural factors

The availability of alcohol, affordability of alcohol and acceptability of alcohol plays an important role in causing drinking problems. These factors are determined to a large degree by social and cultural values. However, these influences operate at various levels; for example, national and racial, religious, occupational and family influences may all play a part. Some cultures and societies, for example Islamic culture, promote total abstinence. At the other extreme are permissive culture;, for example Mediterranean countries, where drinking is actively endorsed. Such countries usually have high rates of morbidity attributable to alcoholic liver diseases (Edwards, *et al*., 1997; Parry & Bennets, 1998).

Between these extremes there may be a mixture of cultural influences encouraging or discouraging drinking; for example, in Jewish societies drinking is generally socially accepted, but strong negative connotations are attached to deviant drinking behaviour such as public drunkenness.

Culture can influence the pattern and context as well as the amount of alcohol consumption. Patterns of alcohol consumption may, in turn, be important determinants of a drinking problem. In France, habitual drinking of wine with meals is associated with a relatively high, but constant per capita consumption, which predisposes one towards chronic medical complications such cirrhosis and certain cancers (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2006).

Culture may also influence the way in which people behave when intoxicated. Family culture may also be an important influence on drinking. In addition to genetic influences, it seems likely that children will inherit heavy drinking patterns by virtue of learning this behaviour and any associated values and beliefs from their parents. However, this does not necessarily mean that all heavy-drinking parents produce heavy-drinking children (Edwards, *et al*., 1997).

2.8.9. Stress and life events

Major life events and everyday hassles both appear to increase the amounts that people drink. This may be explained on the basis that alcohol relieves anxiety and is thus used as a means of coping with stress. An increased frequency of life events usually precedes the onset of alcohol misuse (Sayette, 1999; Arch, Craske, Stein, Sherbourne & Roy-Byrne, 2006). However, evidence from research conducted is not consistent and heavy drinking tends to cause further stress in the form of the problems such as divorce, unemployment and ill health. There is also evidence that alcohol can exacerbate anxiety rather than relieve it (Edwards, *et al*., 1997; Arch, *et al*., 2006; Jané-Llopis & Matsytsina, 2006).

Depression and anxiety is consistently predicted among pregnant women who continue to use alcohol antenatally (Homish, Cornelius, Richardson & Day, 2004). Depression is argued by some as a justification for both initiating and maintaining alcohol and substance use in pregnancy. In women with alcohol and/or substance use disorders, perceived stress is associated with increased use and increased risk of relapse. In South Africa pregnant women tend to have high levels of perceived stress and pose a significant and public health problem (Vythilingum, Roos, Faure, Geerts & Stein, 2013).

2.8.10. Contextual drinking problems

Drinking is a perfect example of a contextual problem. Relatively modest alcohol consumption, which would cause no social, psychological or medical problems in most other contexts, may be the cause of serious injury or death when the drinker is also the driver of a car. Similar considerations also apply to other forms of transportation and safety-sensitive environments (Edwards, *et al*., 1997).

2.9. FACTORS THAT INFLUENCE ALCOHOL CONSUMPTION

Several factors contribute to an individual's decision to drink or not to drink alcohol on any given occasion. These factors are discussed below.

The individual is usually influenced to drink alcohol by the immediate environment, such as the nature of the occasion, the individual's special desire, physical and mental state and also the degree of peer pressure. In addition, socio-cultural influences and historical and contemporary factors contribute to an individual's attitudes, beliefs and values regarding the use of alcohol. These may include religious, ethnic and family customs (Fishman, 1992; Parry & Bennets, 1998).

However, compared with the circumstances of the immediate situation, socio-cultural influences have less effect on an individual's decision to drink. In many cases, persons with particular

beliefs and expectations about drinking come into contact with people who have different attitudes to alcohol use. Thus, an individual may be placed in a situation that demands social drinking at a level that he or she would previously have considered to be alcohol misuse (Fishman, 1992).

Factors in alcohol misuse are likely to include: peer pressure (particularly among young persons) and communal drinking among adults; availability, particularly in more disadvantaged communities; the falling price of certain kinds of alcohol products (e.g. malt beer and brandy) relative to the consumer price index; chemical dependence on alcohol; poor social conditions and boredom; a lack of social controls to deal with those misusing substances; and societal attitudes in general (Rocha-Silva, Miranda & Erasmus, 1996; Parry & Bennetts, 1998).

Ghuman, Meyer-Weitz and Knight, (2012) found in their study that 54 % of students had used alcohol before, 14,5% had had their first drink before the age of 13, and 32% engaged in binge drinking. Students, who were more likely to have used alcohol, were older, male, white and had often seen their fathers drunk, had friends who frequently drank alcohol. With regard to availability and access, for example, there are currently almost 23 000 licensed liquor outlets with an estimated 150 000 to 200 000 unlicensed outlets, yielding approximately one liquor outlet for every 190 persons in South Africa (Parry & Bennetts, 1998). Research has shown that school-going youth find it easy to purchase alcohol from bottle stores, supermarkets, bars and shebeens (Tibbs, Parry, Stretch & Brice, 1994).

2.10. CONSEQUENCES OF ALCOHOL CONSUMPTION

According to the Constitution of the WHO, health is “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”. This definition, therefore, takes into account not just physical and mental harms, but also social harms, both for the drinker and for others.

Alcohol affects virtually every organ system in the body (Schukit, 2009). A few examples of harm to others are included in the analysis of alcohol's contribution to the global burden of disease. These include perinatal conditions attributable to the mother's drinking during pregnancy, and injuries, particularly assault injuries. However, the scope of alcohol-related social harm and of harm to others stretches well beyond these items. Thus, a recent study in Australia (Laslett, *et al*., 2011) identified the following harms to others associated with drinking:

- Harms identified in records—these included deaths and hospitalizations (e.g., attributed to traffic injuries because of driving under the influence), child abuse or negligence cases involving a caregiver's drinking, and domestic and other assaults;
- Harms based on survey reports — these included negative effects on co-workers, household members, other relatives and friends, strangers, and on the community as a whole.

These effects were quite prevalent. Thus, the researchers estimated that within one year, more than 350 deaths were attributed to drinking by others, and more than 10 million Australians (or 70% of all adults) were negatively affected by a stranger's drinking (Laslett, *et al*., 2011).

2.10.1. Health impacts of alcohol

In 2000, alcohol was responsible for 4% of the global burden of disease, which is more or less equal to the damage caused to society by tobacco use (4.1%). Alcohol was estimated to have caused 1.8 million deaths or 3.2% of all deaths globally. Contribution to the global burden of disease was considerably higher in developed countries (9.2%) than in developing countries, partly owing to the greater consumption of alcohol in these countries and partly owing to the high burden from other diseases in developing countries (such as AIDS, Malaria, childhood illnesses, etc.). Alcohol consumption contributes to disease, injury, disability and premature death more than any other risk factor in developing countries with low mortality rates. In high mortality regions including Afro Region E, the GBD was calculated to be 1.6%. For South Africa the estimated burden owing to alcohol (death and disability) has been calculated to be 7.0%, 10.5% for males and 3.1% for females (Schneider, *et al*., 2007)

2.10.2. Direct biological Impacts

Schneider, *et al.*, (2007) argue that both acute intoxication and chronic long-term excessive drinking may have adverse effects on the brain, central nervous and muscular system, liver, heart (though there are also some positive effects for certain groups of people), blood cells, gastrointestinal system, respiratory system, reproductive system, as well as the immune system. Alcohol use contributes to more than 60 diseases and conditions. The conditions mentioned below are some of the most important (the prevalence rates of most of these diseases in South Africa are generally not known and, unless specifically stated, rates refer to international figures).

2.10.3. Alcoholic liver disease

Alcohol is absorbed quickly into the blood system, passes through organs where it oxidizes slowly and can cause damage. The most common organ affected is the liver. Mortality studies have consistently demonstrated that heavy drinkers die from liver disease at a much higher rate than the general population. Types of alcoholic liver disease include alcoholic fatty liver (prevalent in about 20% of heavy drinkers); alcoholic hepatitis; and alcohol cirrhosis (about 10-15% of people with alcohol dependence develop cirrhosis). Alcohol also increases the risk of developing liver cancer (Schneider, *et al.*, 2007; Reuben, 2007).

Alcohol hepatitis is characterized by the inflammation (necrosis) of the liver, jaundice and abdominal pain. Scar tissue may replace healthy tissue, leading to a process of "fibrosis". The condition is reversible with abstinence. Alcohol cirrhosis is the most advanced form of liver disease. The liver is characterized by extensive fibrosis that stiffens blood vessels and distorts the internal structure of the liver. This damage results in severe functional impairment and may result in secondary malfunction of other organs, including the brain and kidneys. The amount of alcohol consumed and the duration of that consumption are closely associated with cirrhosis. More importantly, as consumption increases, the risk of cirrhosis is greater for women than for men. Moreover, consumption of alcohol without food results in higher risk than with food. Cirrhosis can stabilize with abstinence. While alcoholic fatty liver, alcohol hepatitis and cirrhosis

have been considered to be sequentially related, (that is, progressing in this order) this is not always the case. Some cirrhosis develops without hepatitis and hepatitis may have a sudden onset and a rapid course resulting in death even before cirrhosis can develop (Schneider, *et al*., 2007; Reuben, 2007).

2.10.4. Effects on the heart

Alcohol can be beneficial or harmful to the cardiovascular system depending on the amounts consumed and the characteristics of the consumer. Low to moderate consumption has been shown to have coronary benefits for people who are 40 years and older. However, according to the WHO (2005):

> In some industrialized countries where the condition is common and injuries and violence are rare, alcohol consumption may prevent about as many deaths as it causes in some segments of the population. The patterns of drinking in many countries, however, often with heavy episodic consumption, are likely to increase rather than decrease the occurrence of coronary heart disease.

Questions have also been raised regarding the transferability of these findings of the benefits to developing countries. As coronary heart disease is associated with diet, lifestyle and age, and given that the diet of many traditional developing countries is relatively low in fat and high in fibre (a factor that is often given as one of the reasons for the comparatively low incidence of heart disease in developing countries), the findings of the protective effects may not be applicable. Moreover, even if moderate drinking is protective, heavy alcohol consumption could damage the cardiovascular system, causing heart muscle disorders, irregular heart rhythms, high blood pressure and strokes (Schneider, *et al*., 2007).

2.10.5. Effects on blood cells

Alcohol has numerous adverse effects on blood cells and their functions. Heavy drinking can cause generalized suppression of blood cell production and the production of abnormal blood cell precursors that cannot manufacture cells. There is evidence that blood pressure increases

with increased drinking. A study in India found alcohol consumption to be a significant risk factor for hypertension. A meta-analysis found that 11% of cases of hypertension in males and 6% in females could be directly causally attributed to alcohol (Schneider, *et al*., 2007).

2.10.6. Gastrointestinal and respiratory systems

Alcohol can interfere with the structure and function of the gastrointestinal tract. For example, alcohol can impair the muscles separating the oesophagus from the stomach increasing the risk of cancer. Alcohol interferes with the muscle movement of the small and large intestines and the absorption of nutrients into the body (Schneider, *et al*., 2007).

Epidemiological research in developing countries has found a causal link between heavy alcohol consumption and pancreatitis. Eighty per cent of cases of chronic pancreatitis were attributable to alcohol.

A meta-analysis of more than 200 studies found that alcohol strongly increased the risks of various types of cancers (oral cavity, pharynx, oesophagus and larynx) and also revealed statistically significant increases in risk for cancers such as stomach, colon, rectum, liver, breast and ovaries (Schneider, *et al*., 2007).

2.10.7. Reproductive system

In men, alcohol can result in loss of libido, reduced potency, shrinking in size of testes and penis, reduced or absent sperm formation and infertility. In women, alcohol has been found to result in menstrual irregularities, shrinking of breast and external genitalia, as well as and sexual difficulties. It also affects the female reproductive capacity (Schneider, *et al*., 2007).

2.10.8. Immune system

Alcohol consumption affects various components of the immune system. Both chronic and acute alcohol consumption disrupts the immune system functions (Szabo & Mandrekar, 2009). It is evident from animal and in-vitro studies that alcohol impairs various aspects of the immune

system and, particularly, increases the susceptibility to HIV infection. It may also interfere with adherence to anti-retroviral treatment. Some evidence also suggests that alcohol may lead to accelerated progression of the disease (Schneider, *et al*., 2007).

2.10.9. Effects on the brain and central nervous system

Alcohol directly affects brain function in a number of ways. At a behavioural level, neurological disorders resulting from alcohol can result in changes in emotions, personality, impaired perception, learning and memory. The detrimental effects of alcohol on the brain may be similar to Alzheimer's disease. It has been established from autopsies that the brains of people with severe alcohol dependency are smaller, lighter and exhibit greater atrophy than those of non-alcoholics. Neuropsychological studies of people with chronic alcohol dependence have reported cognitive deficits including problems with problem solving, organising, planning and abstraction (frontal lobe functions); short- and long-term memory loss; and 14 verbal fluency, learning, and visio-spacial perceptions. Impaired co-ordination and balance have also been found (Schneider, *et al*., 2007).

Alcohol influences several neurotransmitter systems, including opiate receptors, gamma-aminobutyric acid (GABA), glutamate, serotonin and dopamine. The increase in opiate levels may explain the euphoric effects of alcohol, while its effects on GABA give it anxiolytic and sedative properties, and induce muscle relaxation and the feeling of intoxication. Alcohol inhibits glutamate receptors and long-term ingestion results in the synthesis of glutamate receptors leading to central nervous system excitability when alcohol is withdrawn (Schukit, 2009). The effects of dopamine in the ventral tegmental area may contribute to the rewarding effect of drinking and the craving as well as behavioural dis-inhibition during drinking (Rodseth, 2012).

2.10.10. Co-morbidity

Psychiatric co-morbidity is common in individuals with a history of alcohol abuse and dependence. Schizophrenia, bi-polar disorder, depression, attention deficit disorder, anxiety disorder and eating disorders have all been associated with the abuse of alcohol, though it is not always clear which condition preceded the other (Schneider, *et al*., 2007).

2.10.11. Depression

According to the WHO Global Status Report on Alcohol (WHO, 2004), there is evidence to assume that alcohol has a causal role in depression. Not only do alcohol dependence and major depression co-occur disproportionately, but also higher volumes of alcohol consumption are associated with more symptoms of depression (Graham, Frost-Pineda & Gold, 2007). While it has often been postulated that people suffering from depression "self-medicate" with alcohol (no doubt in some cases this is true), the question of which precedes the other is not yet fully resolved and/or whether there may be a third variable such as neurobiological mechanisms or genetic predisposition, which causes both to occur (Arch, *et al.*, 2006). Nonetheless, evidence of a causal link from alcohol to depression is growing. Reversibility (remission during abstinence) is a key indicator for causal effect of alcohol dependence on depressive disorder and there is good evidence that abstinence substantially removes depressive disorders within a short time frame (Schneider, *et al.*, 2007).

2.10.12. Alcohol dependence

The ICD-10 defines alcohol dependence syndrome as being a cluster of physiological, behavioural and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value. A central descriptive characteristic is the desire (often strong, sometimes overpowering) or sense of compulsion to take alcohol. In the WHO Global Status Report on Alcohol (2004), of 35 countries reporting levels of alcohol dependence amongst the adult population, South Africa had the highest reported figure, that is, 27.8% of males and 9.9% of females. This should, however, be interpreted with great caution, for example, as instruments and timeframes used were not standardized.

Alcohol is consistently the substance of abuse in people receiving help for substance related problems in South Africa. In the first half of 2005, between 47% (Cape Town) and 74% (Durban) of patients receiving treatment had alcohol as a primary or secondary drug of abuse (Parry, 2005). Although the number of people seeking treatment for alcohol abuse seems to be

decreasing and the number seeking treatment for the abuse of other drugs seems to be increasing, alcohol abuse remains the main reason why people seek treatment. The number of patients older than 20 seeking treatment for alcohol problems is substantially higher than that for younger patients.

2.10.13. Non-natural mortality and morbidity

Unintentional and intentional injuries are responsible for up to 10% of the global burden of disease. Internationally, alcohol use accounts for 13% of DALYs lost due to 15 unintentional injuries and 15% due to intentional injuries (Rehm, *et al.*, 2003). The amount of alcohol consumed is a major determinant of both risk and severity of injury. Alcohol plays a major role in traffic and other accidents, as well as homicides, interpersonal injury and suicide. High rates of alcohol have been found in both the "perpetrator" and the "victim". The largest number of non-natural deaths is South Africa is due to violence (48%) followed by transport fatalities (30%). Both violence and transport deaths are closely linked with alcohol (Plüddemann, *et al.*, 2004; Matzopoulos, 2005; Schneider, *et al.*, 2007).

2.10.14. Alcohol-related mortality

Data from the Non-Natural Mortality Surveillance System (NNMSS) in 2002 indicated that 46% of non-natural deaths in South Africa involved persons with blood alcohol concentrations (BACs) greater than or equal to 0.05g/100 ml (Matzopoulos, Seedat & Cassim, 2003). NNMSS data for 2003 indicated that for all causes of death, 49% had positive BACs and the mean BAC overall was 0.18g/100ml (Harris, Sukhai & Matzopoulos, 2004). Levels of BAC positivity were high for homicides (51% positive, with a mean BAC of 0.17g/100ml), suicides (35% positive, with a mean BAC of 0.15g/100ml) and transport related deaths (53.3%) (Matzopoulos, 2005).

The majority of transport-related deaths in South Africa are of pedestrians (38.8%), followed by unspecified (21%), driver of a motor vehicle (17.7%) and passenger (12.2%) of deaths. While in all categories of transport-related death, high alcohol blood levels was prevalent, this was highest amongst pedestrians (61%). This means that, by far, the largest number of transport-related

deaths in South Africa is of intoxicated pedestrians. Despite this, campaigns almost always focus on drinking and driving and not on drinking and walking!

2.10.15. Alcohol-related trauma

In 2001, 39% of trauma patients in Cape Town, Durban and Port Elizabeth had breath alcohol concentrations (BrACs) greater than or equal to 0.05g/100 ml (Plüddemann, *et al.*, 2004). Levels of alcohol positivity were particularly high for persons injured as a result of violence (73% for Port Elizabeth, 61% for Cape Town and 43% for Durban). In data gathered from a wide variety of facilities in the Cape Metropol, Peden reported that 70% of domestic violence cases were alcohol-related (Peden, 1995). From research conducted by the Department of Transport, the national daily average of persons driving under the influence of alcohol was found to have increased from 1.8% in 2002 to 2.1% in 2003 (Arrive Alive, 2005).

The differences between perpetrator and victim are not always clear. For example, victims may include people involved in fights who happened to be the ones injured or killed, or the drunk driver of a motor vehicle injured or killed in an accident.

2.11. SOCIAL AND PSYCHOLOGICAL IMPACTS

Alcohol consumption can have both social and psychological impacts even though these are more difficult to measure than the physical health impacts. However, one can look at substantive impacts on crime, patterns of interpersonal violence, and family and work problems.

2.11.1. Alcohol and crime

A national study of prisoners and parolees in 1996 found that just under half had taken alcohol or other drugs just prior to the crime for which they were incarcerated (Rocha-Silva & Stahmer, 1996). Drinking was especially linked to rape and housebreaking offences. Subsequent research in Cape Town, Durban and Johannesburg in three phases between 1999 and 2000 (Parry, *et al.*,

2004) found that, overall, 15% of the arrestees were under the influence of alcohol at the time the alleged offence took place. Regarding violent offences, arrestees indicated that they were under the influence of alcohol for 25% of the weapons related offences, 22% of rapes, 17% of murders, 14% of assault cases and 10% of robberies. Levels of alcohol-related crimes were particularly high for family violence offences at 49% (Seedat, van Niekerk, Jewes, Suffla & Ratele, 2009).

Arrestees also indicated that they were often under the influence of alcohol in cases involving property offences. For example, 22% of cases involved housebreaking and 12% of cases involved the theft of a motor vehicle. When asked why they had consumed alcohol or other drugs before committing crimes, many arrestees indicated that they consumed these substances in order to give them courage to commit the crimes (Parry, *et al*., 2004).

2.11.2. Interpersonal violence

Of the approximately 2.1 million cases of crime reported in South Africa between April 2007 and March 2008, "contact" crimes (murder, attempted murder, and rape, assault with intent to inflict grievous bodily harm, common assault, indecent assault, aggravated robbery and other robbery) accounted for 33% of all crimes. While the incidence of all contact crime showed a decrease for 2007/2008 as compared to the incidence for 2006/2007, the incidence of violent crime remains unacceptably high. For example, the murder rate per 100 000 for South Africa is 39 000, ranking 7th highest out of 11 countries (Seedat, *et al*., 2009).

Numerous studies have found an association between alcohol consumption and aggressive behaviour though not everyone who consumes alcohol gets aggressive. People with anti-social personality disorders appear to be particularly susceptible to alcohol-related aggression. People who have previously been violent under the influence of alcohol are the most likely to become aggressive when drinking again. Internationally, alcohol has been associated with numerous acts of interpersonal violence which include physical and sexual abuse, emotional and psychological abuse and neglect (Seedat, *et al*., 2009; Setlalentoa, *et al*., 2010).

Various categories of criminal behaviour have been identified as having links to drinking and driving, homicide, domestic violence, other assaults, sexual violence and child abuse. A strong link between alcohol use, crime and violence has been established by meta-analysis, with between a quarter and half of homicides or purposeful injury having shown to be attributed directly to alcohol use (English, Holman, Milne, Hulse & Winter, 1995; Single, Robson, Xie & Rehm, 1998). McClelland and Teplin, (2001) directly observed 2365 police-citizen encounters in the USA. Overall, 34% of these encounters were judged to be alcohol-involved, with the following percentages reported: violent crime and sexual assault (43%), spousal assault (43%), robbery (39%), public order/vandalism (46%) and other non-violent encounters (23%).

2.11.3. Family and work problems

Drinking can impair one's functioning as a parent, as a spouse and as a contributor to the running of a household (Mulaudzi, 2003). Drinking requires time (often spent with drinking colleagues) and this competes with time needed to carry on family life (e.g. time spent with children, doing household chores etc.).

Drinking money often takes precedence over other household needs, often leaving the family unable to afford even basic goods and services. Drinking leads to a spiral of poverty in which the drinking behaviour inhibits income capacity (through absenteeism, lack of motivation, poor quality of work, loosing employment) while any income earned is then spent on drink – at times to drown sorrows related to not having work or only having a poorly paid job. A study in Delhi, India, compared families where the husband drank at least three times a week to those where the husband drank only once a month. In the first group 24% of household income was spent on alcohol compared with 2% in the other families. The family with the drinker had significantly more debts (60% vs. 42%) and these debts were twice as large (Mulaudzi, 2003; Mothiba & Malema, 2009).

While continuing patterns of drinking threaten family subsistence, events that take place when a family member is intoxicated can also have lasting consequences – mainly through injuries and

family violence. The psychological toll on the family is often great. For example, in interviews with family members of heavy drinkers in Mexico, 73% reported feelings of anxiety, fear and depression, 62% reported physical or verbal aggression, and 31% reported family disintegration. For many mothers, the inability of the fathers to bring in adequate incomes to feed and clothe their children owing to their drinking habits, leads to depression in the mothers (Mulaudzi, 2003; Mothiba & Malema, 2009).

Violence against women and children often has severe psychological consequences for the victims (WHO, 2001). Alcohol can impair work performance through decreased efficiency and it can lead to poor workplace safety. For example, intoxication can result in errors of judgement, accident proneness and putting the lives of others at risk. Alcohol misuse also results in greater absenteeism from work and increases the risk of dismissal from work. In Costa Rica it was found that 30% of absenteeism and workplace accidents were caused by alcohol dependence. In India 15-20% of absenteeism and 40% of accidents were due to alcohol. Among Grades 8 and 11 learners in Cape Town, a significant association was found between past month use of alcohol and the number of days absent from school and repeating a grade. The odds of repeating a grade were 60% higher for learners who consumed alcohol. Whether this relationship was causal, or occurred through another factor was not established (Peltzer, Cherian & Cherian, 1999b).

2.12. SPECIAL AREAS OF CONCERN IN SOUTH AFRICA

Two areas regarding alcohol in South Africa need special mention. These are the Foetal Alcohol Syndrome (FAS) and HIV/AIDS.

2.12.1. Foetal Alcohol Syndrome (FAS)

Heavy alcohol intake during pregnancy, usually in a binge drinking pattern, occurs in over 20% of women in the Western Cape (Croxford & Viljoen, 1999). Drinking during pregnancy remains

a problem despite considerable media attention efforts by the national government to limit alcohol harm and isolated initiatives to increase universal and other preventive activities in these provinces (Chersich, Urban, Olivier, Davies, Chetty & Viljoen, 2012). Drinking alcohol during pregnancy may lead to damage to the foetus. This could be in the form of Foetal Alcohol Effects or full-blown Foetal Alcohol Syndrome (FAS). FAS is characterized primarily by damage to the brain and the central nervous system, which results in hyperactivity, attention problems, learning disabilities (e.g. problems of memory, abstract reasoning), lack of judgement and fits. Other organs such as the heart and kidneys, as well as growth may be affected. There is no cure for FAS, and most FAS children are unable to cope with normal schooling (May, Brooke, Gossage, Croxford, Adnams, Jones, Robinson & Viljoen, 2000). Moreover, many FAS children are part of "alcoholic families" who are unable to give them the special care and attention they need. The result is that many FAS children drop out of school early, are not easily employable and are susceptible to gangs, crime and peer-pressure (Croxford & Viljoen, 1999; Viljoen, Craig, Hymbaugh, Boyle & Blount, 2003).

South Africa has the highest reported rate of FAS in the world. (It must be noted though that poorer countries have never conducted epidemiological research into FAS and thus rates in these countries are not known). Other studies have also found that FAS is higher with higher levels of FAS in the Western and Northern Cape than anywhere in the world (Olivier, Urban, Chersich, Temmerman & Olivier, 2013). In poorer areas of the Western Cape the prevalence of FAS among Grade 1 learners was found to be 46 per 1000 in 1997 and this increased to 75 per 1000 in 1999. In the Northern Cape rates of 103 and 75 per thousand were found in different areas. Prevalence in three poor areas in Gauteng found rates of 12, 22 and 37 per 1000. While the Gauteng rates were lower than those of areas in the Cape, they are still far higher than even the most at risk communities in developed countries, such as the urban poor or native settlement areas in the USA. In studies in the USA and France, rates of 0,5 and 3,0 per 1000 were found. Mothers who drink alcohol in a binge fashion while pregnant and exceed 5 drinks per week per occasion, that is, more than 90mls of absolute alcohol, are especially at risk for FAS. Thus, one heavy bout of drinking may be enough to cause FAS (May, 1995).

2.12.2. Risky sexual behaviour

The misuse of alcohol is increasingly being recognised as a key determinant of risky sexual behaviour, and, consequently, an indirect contributor to HIV transmission in sub-Saharan countries. According to Morojele, *et al*. (2004), numerous cross-sectional investigations conducted among adults in this region have shown consistently that alcohol use is associated with HIV infection as well as with risky sexual behaviours, such as having multiple sexual partners (Mnyika, Klepp, Kvale & Ole-Kingori, 1996; Mbulaiteye, Ruberantwari, Nakiyingi, Carpenter, Kamali & Whitworth, 2000; Campbell, Williams & Gilgen, 2002; Hargreaves, James, Morrison, Chege, Rutenberg, Kahinde, Hayes & Buve, 2002; Fritz, Woelk, Bassett, McFarland, Tobaiwa & Stall, 2002; Clift & Barrett, 2003, Mnyika, Klepp, Kvale & Ole- Kingori, 1997; Trigg, Peterson & Meekers, 1997).

Three different but related explanations are proposed to account for the relationship between alcohol use and risky sexual behaviour. First is the argument that alcohol consumption may represent other behavioural, lifestyle, contextual and/or personality factors which are associated with engagement in high-risk sexual behaviour (Hargreaves, *et al*., 2002). Secondly, ethanol acts on the central nervous system, reduces inhibitions, and, consequently, increases people's likelihood of engaging in risky sexual and other behaviours. Thirdly, people's alcohol expectancies, that is, their expectations about how alcohol will influence their behaviour, can also influence their actual behaviour (Brown, Christiansen & Goldman, 1987).

In both qualitative and quantitative studies conducted by Morojele, *et al*. (2004) in a black township in South Africa among adults between the ages of 22 and 45 it was found that there were strong relationships between various measures of alcohol use and risky sexual behaviour. In this quantitative study, two main types of effects that alcohol consumption may have on sexual behaviour were identified, that is, drinking seems to increase the appeal of sexual episodes and it reduces people's control with respect to sexual encounters. The variables which were found to be associated with the reported increased sexual appeal owing to drinking were being young, not being married, being employed, drinking more, being a problem drinker, having more sexual partners and engaging in regretted sex (Mbulaiteye, *et al.*, 2000; Kalichman & Simbayi, 2004).

This profile seems to suggest that inexperienced, younger, heavier drinking adults are at greatest risk of having alcohol-related risky sexual encounters. Those who reported being less able to have control over their condom use after drinking were less likely to have used condoms in their lifetimes. It seems that those who were usually not inclined to use condoms might have become even less inclined to use them after drinking. However, other individuals who were most strongly committed to condom use became even more vigilant when drinking (Kalichman & Simbayi, 2004).

Men appear to be at greater risk of engagement in alcohol use-related risky sexual behaviour than women. Men are also more likely to report that they engage in sex under the influence of alcohol, that drinking increases their desire to have sex with a casual partner and that drinking worsens their ability to resist unwanted sexual advances (Kalichman & Simbayi, 2004).

2.13. SCREENING FOR RISKY DRINKING

Screening for risky drinking should be routine in primary health care clinic practice in order to prevent alcohol-related problems before they become disabling and more difficult to manage. Early identification of alcohol-related problems is important because these problems are prevalent, pose serious health risks to patients and their families, and are amenable to intervention. Brief intervention may help patients to change their behaviour. Recording the history of the patient's drinking behaviour in order to identify patterns of alcohol-related difficulties with physical and mental health, family life, legal authorities and employment, can be the most effective tool for screening (Burge & Schneider, 1999).

Research indicates that after personal reflection about the negative consequences of alcohol misuse, many drinkers reduce their drinking without formal treatment. Health care providers in primary health care clinic settings can help prevent the serious effects of alcohol-related problems by stimulating such reflection and moving patients toward healthier lifestyles (Burge & Schneider, 1999).

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

Most problem drinkers are employed, employable, or in families, indicating that the scope of the problem extends far beyond those who meet the formal diagnostic criteria. Therefore, in a primary health care clinic setting, one first identifies and then helps the patient understand and acknowledge the consequences of drinking, the presence of a problem, and the need for intervention.

Screening questionnaires

A variety of screening procedures that are intended to aid in the detection of people with harmful and hazardous alcohol consumption in clinical and primary health care clinic settings have been devised e.g. the 25-item MAST and CAGE test (WHO, 1996; Edwards, *et al.*, 1997; Cherpitel, 1997). These tests generally tend to pick up the more extreme rather than the easy cases. The MAST test, for instance, has among its items delirium tremens and hospital admission for drinking. However, the tests show remarkably good sensitivity and specificity for excessive drinking and alcoholism (Edwards, *et al.*, 1997). Thus, such instruments are of value for routine screening in a hospital setting. Questionnaires may be of value in a primary health care clinic. However, these tests, in general, have found more application as research tools than in the front line medical and social setting where paper and pencil tests provide no substitutes for vigilance, sympathetic questioning and the real skills needed for identifying drinking problems of all degrees, types and concealment (Edwards, *et al.*, 1997).

The Alcohol Use Disorder Identification Test (AUDIT) was developed by an international group of investigators at the request of the World Health Organization. Its aim is to identify problem

drinkers in primary health care clinic settings. It was designed for use by health care workers in developed and developing countries. AUDIT was designed specifically to detect problem drinkers rather than alcoholics by placing emphasis on heavy drinking and frequency of intoxication rather than signs of dependency (Haggerty, 1994). AUDIT is useful in screening for both currently harmful and potential hazardous drinking and has demonstrated high sensitivity and specificity, and it can identify mild dependence. Potentially, this is the screening questionnaire that should be of value to clinicians and researchers in the primary health care clinic in the future (Edwards, *et al.*, 1997; Cherpitel, 1997). The questions refer to lifetime alcohol experiences, as well as those in the past year, thus distinguishing between current and previous problems (Haggerty, 1994).

2.14. TREATMENT

The fact that the annual increase in new alcoholics is greater than the number who are successfully treated, and that it is from the population of non-problem drinkers that new problem drinkers emerge, requires society to make an effort to prevent alcohol abuse among people who are not experiencing any alcohol-related difficulties.

2.14.1. Primary prevention

Efforts are intended for individuals who drink alcoholic beverages but do not have alcohol-related problems, and those people who do not yet drink alcohol. The goal of prevention is to reduce the possibility of drinking problems occurring. It also involves identifying groups at increased risk including professionals, executives, young people, and women, especially those of childbearing age, and the elderly, as well as those with depression, other drug use or a family history positive for alcoholism (Edwards, *et al.*, 1997).

2.14.2. Secondary prevention

Intervention focuses on alcohol users whose drinking is causing problems, and attempts to keep these problems from becoming severe.

2.14.3. Tertiary prevention

The treatment deals with drinkers and alcoholics who are experiencing severe problems as a result of their drinking. The goal of treatment is to help these individuals stop drinking and return to a productive life (Edwards, *et al*., 1997).

2.15. INTERVENTION

Alcohol use is associated with tremendous costs to the drinker, those around him or her, and society as a whole. These costs result from the increased health risks (both physical and mental) associated with alcohol consumption, as well as from the social harm caused by alcohol. To reduce alcohol's impact on the burden of disease, as well as on other social, legal, and monetary costs, therefore, it is imperative to develop effective interventions that can prevent or delay initiation of drinking among those who do not drink, particularly adolescents, and limit consumption to low-risk drinking levels among those who do consume alcohol.

The main goal is to make problem drinkers aware of the connection between their drinking and their physical health, personal relationships, job performance and circumstances. Many problem drinkers attempt to deny these connections and they may not be desperate enough to seek help on their own. In the light of this resistance, intervention is tailored to the individual and his or her circumstances (Edwards, *et al*., 1997).

Sometimes, confrontational intervention treatment presents the problem drinker with clear evidence of his or her self-destructive behaviour. The confrontation might be produced by a spouse who threatens divorce, by an employer who threatens a loss of job or by a physician who points out the profound medical consequences of continued drinking. Such confrontations are

frequently successful in moving the problem drinker into action. In general, the earlier that intervention takes place in a drinking career, the more successful it is (Edwards, *et al*., 1997).

Current knowledge holds that the earlier the intervention in a potentially troublesome drinking career, the better the chances of reversing the trend and overcoming the problems. It is not the sole responsibility of teachers, employers or professional counsellors to carry out interventions, a remark by a friend or family members can help alert the person to the knowledge and concern that other people have about his or her drinking behaviour. Sometimes a single-session intervention might not have a successful impact; it might take several interventions before a person begins to take action. This is mainly because, when people are confronted with an aspect of their behaviour they do not wish to recognize, they often deny that it exists at all. This initial denial is often a reflection of an unconscious attempt to minimize a problem's significance and protect the ego against criticism. With sensitive, caring and supportive intervention the problem drinker will eventually feel comfortable enough to admit that he or she is having an alcohol-related problem (Fishman, 1992).

2.16. BRIEF INTERVENTION FOR ALCOHOL PROBLEMS

This section addresses the effectiveness of brief intervention and implementation in the health sector. Brief interventions are characterized by their low intensity and short duration and usually comprise one to three sessions of counselling and education. The goal is to provide early intervention. The assumption underlying screening and brief intervention in primary health care clinics is that, for identified risky drinkers, reducing overall alcohol consumption or adopting moderate drinking patterns will reduce the risk of medical, social, and psychological problems (WHO, 1996).

The effectiveness of brief intervention for risky drinkers

Brief interventions for reducing their levels of alcohol consumption and alcohol-related harm have been developed and implemented in many countries (Pennings, Leccese & Wolf, 2002).

These seek to change views of personal acceptability of excessive drinking and to encourage self-directed behaviour change. They include simple forms of structured advice and brief counselling (Whitlock, Polen, Green, Orleans & Klein, 2004). Easy access to these interventions is possible as they can be delivered by a wide range of generic practitioners (Grothues, Bishof, Reinhardt, Meyer, John & Rumpf, 2008).

An international evidence-based research has accumulated data for more than 20 years, with efficacy data originating mainly from English-speaking countries. Reductions in the volume of alcohol consumed are typically about 10-15% (Pennings, *et al*., 2002) and reductions in the proportions of hazardous drinkers are between 10-19% (Bien, Miller & Tonigan, 1993) following brief intervention. Reductions in alcohol problems of a similar magnitude and in health service utilization have also been identified (Wilk, Jensen & Havinghurst, 1997; Emmen, Schippers, Bleijenberg & Woller, 2004). Motivational Interviewing (MI), defined as "a facilitative, patient-centred counselling style for helping people explore and resolve ambivalence" (Fleming, *et al*., 1997), has become increasingly prominent within this literature.

Opportunistic screening and brief intervention (SBI) has been shown to be effective and cost-effective in reducing the health and social problems that result from excessive drinking (Anderson, 1993; Wilk, *et al*., 1997). In addition to providing health gains for patients, SBI may reduce societal costs of excessive drinking and result in economic gains for health services (Moyer, Finney, Swearingen & Vergun, 2002; Fleming, Mundt, French, Manwell, Stauffacher & Barry, 2003). Brief interventions have been viewed as having the most promise for treatment of individuals whose alcohol problems are in the mild-to-moderate range of severity. Accordingly, brief interventions may have their greatest public health influence in primary and secondary prevention efforts (Heather, 1995; Heather, 2002; Freyer-Adam, Coder, Baumeister, Bischof, Riedel, Paastsch, Welder, Rumpf, John & Hapke, 2008). A number of clinical trials for brief interventions for alcohol problems have been conducted in the primary health care clinic setting, where individuals are treated for medical problems that may be caused or exacerbated by the excessive use of alcohol (Fleming, *et al*., 1997; Parish, 1997). There is substantial evidence supporting the efficacy of brief intervention in reducing heavy drinking.

Heather (1986) reported a study whose subjects were recruited from newspaper advertisements, that sought people who considered themselves to be heavy drinkers. The purpose of the study was to compare the effectiveness of a self-help manual designed to help people to cut down their drinking with a simple information booklet. The author found that the group who received the self-help manual reported a significantly greater reduction in the previous week's mean alcohol consumption of the six-month follow-up than those who had been given the booklet. However, this difference was not maintained at the one-year follow-up.

In another study which used the media to recruit subjects, Sanchez-Craig, Spivak and Davila (1991) explored whether additional interpersonal contact was more effective than giving health-related literature on its own. It evaluated the effects of personal counselling and counselling when combined with two types of reading materials on patterns of alcohol consumption. It was found that, after one year, all groups reported a significant reduction in the mean number between the groups.

No control groups were used in the studies reported by Heather (1986) or by Sanchez-Craig, *et al*., (1991). Consequently, the extent to which the interventions (as opposed to any confounding variable) influenced the outcome cannot be assessed. Anderson and Scott (1992) found, in their controlled study of the effectiveness of minimal intervention by general practitioners, that statistically significant improvements were demonstrated one year after patients had been given simple advice about their alcohol consumption by their general practitioners. The effectiveness of minimal intervention approaches for problem drinkers in general hospital wards has also been demonstrated (Chick, Lloyd & Crombie, 1985; Babor & Grant, 1992).

In a study conducted by Chick, *et al*., (1985) the intervention consisted of a one-hour counselling session supplemented with an information booklet. One year later, statistically significant reductions in alcohol consumption were reported by both the control and treatment groups. The treatment group reported significantly fewer alcohol-related problems than the controls, and the

results were supported by changes in the results of liver function tests. All patients who were recruited to the study were males under 65 years of age and were either in employment or had recently been employed.

By excluding women, unemployed men and those over 65 years, the study failed to address the effectiveness of such interventions for a relatively large proportion of the general hospital patient population. Both the screening procedure and interventions were carried out by a nurse who was a specialist practitioner with considerable experience in counselling problem drinkers. It may be that such effects would not have been found if the interventions had been delivered by general nurses who work in acute care hospital wards and are able to spend as much time (i.e. one hour) in discussing issues relating to alcohol consumption as was given to the participants of the study.

A large international study of brief interventions for alcohol problems was conducted by a team of researchers in ten countries. The study was co-ordinated by the World Health Organization (Babor & Grant, 1992). One thousand six hundred and fifty five subjects were recruited from a variety of settings which included general hospital wards, emergency departments, primary health care clinics (PHC), health screening agencies, educational institutions and the workplace. Following recruitment to the study, subjects were assigned to one of three experimental groups for treatment: (i) a control group who received no treatment; (ii) a group who were given five minutes of simple advice about drinking; and (iii) a group (brief counselling condition) who were given more extensive advice in a 20 minute counselling session and a 30 page problem-solving manual about controlled drinking. Reductions in reported levels of alcohol consumption were seen in all groups, with the exception of the 'simple advice' group in two of the ten countries, and in a control group in one country. It appears that brief intervention may have a place in the repertoire of treatment modalities for problem drinkers.

Watson (1996), in another study, assessed the effectiveness of brief interventions, administered by a general hospital nurse, in an acute care setting, to help a sample of at-risk problem drinkers to achieve a reduction in alcohol consumption. The study evaluated the effectiveness of giving:

(i) a booklet containing information about sensible drinking limits, how to calculate consumption in standard units and suggestions about how to reduce consumption; (ii) the information as described in the booklet, but in a one-to-one personal interaction; (iii) a combination of the information in the booklet and the advice; and (iv) no treatment.

It was found that after one year, there was no significant difference in the levels of any of the outcome measures in those four groups. The results of this study did not show conclusive effects of minimal intervention. The study found that all groups reported lower levels of alcohol consumption in follow-up sessions. This finding is not confined to this study as reductions in mean drinking levels of the control group, as well as of the treatment group, was a feature in many of the studies of minimal interventions for problem drinkers (Chick, *et al*., 1985; Babor & Grant, 1992; Anderson & Scott, 1992).

The fact that there were highly significant reductions reported at the one-year follow-up for the entire sample, including the control group, for the mean levels of consumption, number of reported alcohol problems and the levels of both liver enzymes, could be because the detailed inquiry into drinking behaviour of the screening procedure acted in itself as an intervention. Its effect was to raise awareness of potentially harmful levels of alcohol consumption. This suggests that simply asking patients about alcohol consumption may act as an intervention in its own right. It could be that talking in detail with patients about the amount they drink at a time when they are unwell and, therefore, perhaps more sensitive to issues which relate to their health, is sufficient to encourage them to consider the implications of their drinking on their health.

2.17. IMPLEMENTING INTERVENTIONS

Intervention can best be implemented in the health sector. Parry and Bennetts (1998) note that "the first step is to identify alcohol problems at the primary health care clinic level." Health workers need to ask patients about their drinking practices in a way that will elicit honest answers. Secondly, there is a need to institute brief interventions for heavy drinkers at the

primary health care clinic level. There is no referring here to 'alcoholics'. Research in this area has been undertaken by the WHO in various developing countries, including Zimbabwe. This research has stressed that the target should be on consumption of alcohol itself and the focus should be on responsible drinking rather than on abstinence.

Two strategies have been proposed, namely giving brief interventions in the form of five to ten minutes of giving advice and issuing leaflets. The advice should focus, for example, on encouraging people to drink more slowly, to drink smaller quantities each time and on how to avoid intoxication. Brief intervention usually takes longer and comprises a form of condensed cognitive-behavioural therapy that includes the use of a self-help manual as well as follows visits (Parry & Bennetts, 1998).

WHO (2002) notes that in primary health care clinics, hazardous and harmful drinkers present themselves for treatment twice as often as other patients and may constitute 20% of the patients on a practice list. However, alcohol problems are responsive to early and brief intervention in primary health care clinics. A number of randomized controlled trials have shown that, in comparison with controls, hazardous and harmful drinkers receiving five to ten minutes of brief structured advice plus a self-help booklet from primary health care clinic workers will reduce alcohol consumption by an average of 25%. Primary health care clinics are a particularly valuable point of contact for the delivery of brief interventions because of the large proportion of the population who access primary health care services each year. Overall, it has been estimated that around 20% of patients identified as hazardous or harmful drinkers who receive a brief intervention will reduce their alcohol consumption.

Alcohol policy

The White Paper for Transformation of the Health System in South Africa, 1997 and the National Drug Master Plan, 1999 in South Africa have prioritized prevention and management of alcohol abuse and the integration of substance abuse in primary health care. The Department of Health (2001) has included in the service description of clinics the prevention and management

of substance abuse. Standards for PHC include health-learning materials on alcohol in local languages and competence of health staff in identifying alcohol abuse and providing basic counselling for behaviour changes and referral to NGOs specialising in substance abuse.

The Department of Health (1996) has also produced a primary health care clinic Mental Health manual, which includes a section on substance abuse and alcoholism. In 2001, the Department of Health trained trainers from all provinces on the prevention and management of substance use in primary health care. The training included the basics of early identification with the CAGE or AUDIT and brief intervention of alcohol problems. Consequently, various training workshops have been conducted on the prevention and management of substance abuse for multidisciplinary Primary Health Care staff in the provinces of South Africa.

Brief intervention is generally restricted to four or fewer sessions, each session lasting from a few minutes to an hour. The intervention is designed to be conducted by health professionals who do not specialize in addiction treatment. It is most often used with patients who are not alcohol dependent, and its goal may be moderate drinking rather than abstinence (NIAAA, 1999). However, when used for alcohol-dependence the goal is abstinence. Brief intervention has been used to motivate alcohol-dependent patients to enter specialised treatment with the goal of abstinence. Research indicates that brief intervention for alcohol problems is more effective than no intervention and often as effective as more extensive intervention (WHO, 1996).

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

This section presents the research methodology used when conducting the study. The first part describes the randomized control trial and its functions. This is followed by the description of the target population, sample and sampling procedure, instrument and data collection methods. This is followed by a description of how the data was analysed and the ethics observed while conducting this study.

3.2. RESEARCH DESIGN

Research design is a plan or blueprint of how a researcher plans or intends to conduct a study (Babbie & Mouton, 2001). It includes the methods and techniques used to collect, analyse and interpret data (Leedy & Omrod, 2001; Weiten, 2011). There are two major approaches to research, namely qualitative and quantitative approaches.

Qualitative research relies on language and the interpretation of its meaning. Data collection methods are dependent on the participants and do not involve testing of the hypothesis. Quantitative research data, however, is collected in order to determine numbers based on hypothesis testing (Creswell, 2003; Weiten, 2011). This study evaluates the effectiveness of the screening and brief intervention approaches concerning risky alcohol drinkers. The quantitative approach is more relevant to this study than the qualitative approach.

In this study, the researcher used the quantitative approach, which is a method that produces numerical data (Black, 1999). According to Thompson and Panacek (2006), scientific research is more thorough and the findings are more reliable when experiments have been used. Another advantage of using experiments is that if one wants to study the impact of an intervention on

human behaviour, experiments yield reliable data that can be repeated with more or less the same results (Weiten, 2011).

3.2.1. Experimental design

Experimental design is a research design where the researcher selects a group of subjects, does something to them, and observes the effects of what was done (Babbie & Mouton, 2001; Leedy & Omrod, 2001; Weiten, 2011). In experimental research, there are three major pairs of components, namely the independent and dependent variable; pre-test and post-test; and the experimental and control groups.

An experiment is defined as the collection of comparative data under controlled conditions (Jadad, 1998; Weiten, 2011). According to Kirk (1982), two of the distinguishing characteristics of an experimental design are the presence of one or more control groups, and the random assignment of participants to the experimental and control groups. In experimental research, the researcher controls and manipulates the independent variable in some way, in order to observe the effects of that manipulation on the dependent variable (Leedy & Omrod, 2001; Weiten, 2011). In a way, this compromises the control group in the sense that they are not receiving the manipulation on the independent variable.

The main characteristic of experiments is that they involve identifying and isolating individual aspects of a situation, making changes and observing the effects in detail. They are ideal for testing a hypothesis, and the basic aim of an experiment is to test the impact of an intervention on the outcome (Creswell, 2003; Weiten, 2011).

There are two types of experimental design, namely true experimental design and quasi-experimental design (Bennet, 2003; Weiten, 2011). The true experimental design uses a matched control and experimental group, and their equivalence is achieved by allocating numbers randomly to either group. In quasi-experimental design, however, this is not the case; non-equivalent groups are used.

The major strength of using a true experiment or randomized control trial is that it is able to hold all other extraneous variables constant, and to vary only those factors of interest. This enables researchers to determine with confidence whether the effects observed are due to the factors that have been manipulated, though it is not always possible for a researcher to have control over participants. The strength of the experimental design is that participants can be randomly assigned to conditions to rule out other rival hypotheses, but the major weakness of a true experimental design is matching the control and experimental groups, which is not always easy (Bennet, 2003; Weiten, 2011). In this study, a randomized control trial was used and is discussed in the following section.

3.2.2. Randomized control trial

A randomized controlled trial is defined as a study in which people are allocated at random (by chance, like the flip of a coin alone) to receive one of several clinical interventions (Jadad, 1998). One of these interventions is the standard of comparison or control. The control may be a standard practice, a placebo ('sugar pill'), or no intervention at all. Randomized controlled trials seek to measure and compare the outcomes after the participants have received the interventions. Because the outcomes are measured, randomized controlled trials are quantitative studies (Jadad, 1998).

After recruiting a total group of subjects, the researcher may randomly assign those subjects to either the experimental or control group (Babbie & Mouton, 2001; Weiten, 2011). In this study, the randomized control trial was used as the study aimed at evaluating the effectiveness of an intervention method (BI) for risky drinkers. A randomized control trial allows a researcher to compare two groups before intervention and after intervention to determine whether the intervention done had any impact and also to show if it can be used as an intervention method.

In this study, after the researcher had conducted the screening (pre-test), that is the administration of an AUDIT questionnaire, participants were randomly assigned to two groups, the experimental group and the control group. The experimental group was exposed to brief intervention, while the

control group was not. The control group received no intervention and was provided with only an information leaflet on cutting back consumption. Between the pre-test and post-test of participants, the experimental group received brief intervention and then after a period of six months, a post-test re-administration of the AUDIT questionnaire was done. This was done to compare the change in drinking behaviour in both groups prior to intervention and post intervention for the experimental group at Time 1 and Time 2 and for the control group at Time 1 and Time 2.

Jadad (1998) argues that Randomized Control Trials are quantitative, comparative, controlled experiments. The RCT is one of the simplest and most powerful tools in clinical research (Stolberg, Norman & Trop, 2004). RCTs are considered the most reliable form of scientific evidence because they eliminate all forms of spurious causality (Jadad, 1998). RCTs are mainly used in clinical studies but are also employed in other sectors such as judicial, educational and social research (Stolberg, *et al.*, 2004). Clinical RCTs involve allocating treatments to subjects at random. This ensures that the different treatment groups are 'statistically equivalent'.

The randomization procedure gives the randomized controlled trial its strength. Random allocation means that all participants have the same chance of being assigned to each of the study groups. The allocation, therefore, is not determined by the investigators, the clinicians, or the study participants (Jadad, 1998). The purpose of random allocation of participants is to ensure that the characteristics of the participants are as likely to be as similar as possible across groups at the start of the comparison (also called the baseline). If randomization is done properly, it reduces the risk of a serious imbalance in known and unknown factors that could influence the clinical course of the participants. No other study design allows investigators to balance these factors.

In essence, the randomized controlled trial is a study in which people are allocated at random to receive one of several clinical interventions (Jadad, 1998). On most occasions, the term "intervention" refers to treatment, but it should be used in a much wider sense to include any clinical manoeuvre offered to study participants that may have an effect on their health status.

Such clinical manoeuvres include prevention strategies, screening programmes, diagnostic tests, interventional procedures, the settings in which health care is provided, and educational models (Jadad, 1998).

Randomized controlled trials are used to examine the effect of interventions on particular outcomes such as death or the recurrence of disease. Some consider randomized controlled trials to be the best of all research designs, or "the most powerful tool in modern clinical research", mainly because the act of randomizing patients to receive or not receive the intervention ensures that, on average, all other possible causes are equal between the two groups. Thus, any significant differences between groups in the outcome event can be attributed to the intervention and not to some other unidentified factor (Stolberg, *et al*., 2004).

However, randomized controlled trials are not an answer to all clinical questions. For example, the effect of a risk factor such as smoking cannot ethically be addressed with randomized controlled trials. Furthermore, in many situations randomized controlled trials are not feasible, necessary, appropriate or even sufficient to help solve important problems (Jadad, 1998; Stolberg, *et al*., 2004). Randomized controlled trials are not appropriate for cancer screening, a situation in which the outcome is rare and frequently occurs only after a long delay. Thus, although the test for appraising the ultimate value of a diagnostic test may be a large well-designed randomized controlled trial that has patient outcomes as the end point, the trial should presumably be performed after other smaller studies have examined the predictive value of the test against some accepted standard (Jadad, 1998; Stolberg *et al*., 2004).

3.2.3. Randomized Controlled Studies

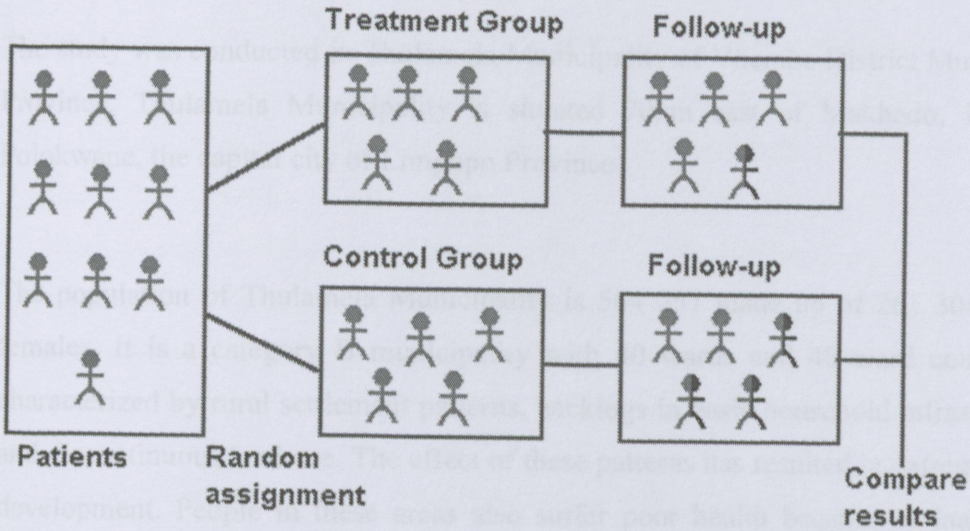

Figure 3.1. The process of a randomized control trial

A randomized controlled study is one in which:

1. There are two groups, namely one treatment group and one control group. The treatment group receives the treatment under investigation, and the control group receives either no treatment or some standard default treatment.
2. Patients are randomly assigned to all groups.

Assigning patients at random reduces the risk of bias and increases the probability that differences between the groups can be attributed to the treatment. Having a control group allows researchers to compare the treatment with alternative choices. For instance, the statement that a particular medication cures 40% of the cases tells very little unless researchers also know how many cases get better on their own (or with a different treatment).

Randomized controlled trials are the standard method of answering questions about the effectiveness of different therapies. If a researcher has a therapy question, he or she should first look for a randomized controlled trial, and then go on to look for other types of studies only if one is not found.

3.3. LOCATION OF THE STUDY

The study was conducted in Thulamela Municipality of Vhembe District Municipality in Limpopo Province. Thulamela Municipality is situated 70km east of Makhado, 180km north east of Polokwane, the capital city of Limpopo Province.

The population of Thulamela Municipality is 584 257 made up of 261 304 males and 322 953 females. It is a category B municipality with 40 wards and 40 ward councillors. The area is characterized by rural settlement patterns, backlogs in basic household infrastructure and services, and discontinuous land use. The effect of these patterns has resulted in extreme poverty and under-development. People in these areas also suffer poor health because of inadequate housing and health facilities. Thulamela Municipality is divided into two geographical areas, namely Thohoyandou and the surrounding rural settlement, and Malamulele (and the surrounding areas). The largest portion of the population is of school going age. Even though Thulamela has many people with different cultures and languages, the predominant cultures are those of the Tsonga/Shangaan and VhaVenda people which have a unique but unified history.

The study was conducted at a primary health care clinic, namely, Sibasa clinic in the Thulamela Municipality. The Vhembe District Municipality health services are offered in the following health establishments:

a) One regional hospital;
b) Six district hospitals;
c) One hundred and ten clinics;
d) Three get away clinics;
e) One health information centre;
f) Nineteen mobile clinics.

3.4. POPULATION

A population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying (Babbie & Mouton, 2001). The population of this study was comprised of people who arrived to consult health professionals at Sibasa clinic for any physical ailments. The people were interviewed by the researcher using the Alcohol Use Disorder Identification Test (AUDIT) to determine whether they were risky drinkers, in order to be included in the study. The risky drinkers were those who had a score of 8-19 on the AUDIT questionnaire. The population of this study (N=140) consisted of 105 males between the ages of 20 and 47 and 35 females between the ages of 21 and 40 at baseline.

At post-test, the population (N=132) comprised 98 males between the ages 20 and 47 and 34 females between the ages of 21 and 40. This study was part of the bigger Screening Brief Intervention project that was conducted in Limpopo Province. The study was approved by the University of Venda School of Health Sciences Research and Publication Committee and Senex. Permission to conduct the study was granted for the bigger Screening Brief Intervention project by the provincial Department of Health, and local health authorities. In this study the permission for the larger study was used. Ethical clearance was obtained for this study from the University of Venda Ethics Committee.

3.4.1. Sampling procedure

Sampling is a process used to select cases for inclusion in a research study. Shipman (1988:52) define sampling as "a systematic way of choosing a population small enough to study and large enough to be representative". The main aim of sampling is to save time, effort and to obtain consistent and unbiased estimates of the population status in terms of what is being researched.

There are two main types of sampling methods, each with different subtypes: probability and non-probability sampling (Babbie & Mouton, 2001). In probability sampling, each element of the population has the same known equal chance of being chosen at random and has the same

known equal probability of being selected. In non-probability sampling, however, the chance of selection for each element is unknown and for some elements the chance is zero (Bless & Higson-Smith, 2000; Strydom & Venter, 2002). A sample is taken to enable a researcher to learn more about the population from which that sample has been drawn because it is impossible to study the entire population.

This study used an experimental design which involved patients at Sibasa clinic being selected and randomly assigned to either the experimental group to receive the experimental alcohol intervention or to the control group to receive information leaflets and no intervention. The researcher administered the AUDIT questionnaire to screen participants. Following informed consent and completion of baseline assessment prior to intervention, the researcher drew a randomly computer-generated group assignment in a sealed envelope to determine under which experimental group each participant should fall. The two groups to which they were put were the SBI experimental group and the control group (receiving information leaflet on cutting back). Random assignment occurred following the baseline assessment.

Participants who met the criteria were asked to participate in the study. Criteria for inclusion in the study were that prospective participants had to be over 18 years old, that they had to be both males and females, and that after screening, should have scored between 8 and 19 on the AUDIT questionnaire. Those who scored 20 or more on the AUDIT were referred to the hospital for further management.

3.4.2. Sample size

A sample is defined as a small subgroup of a population or representative group of people selected from the population the researcher is interested in studying (Babbie & Mouton, 2001). The size of the sample depends on the type of study. In experimental designs, for example, only a few participants can be used. Strydom and Venter (2002) are of the opinion that 30 participants are enough to perform statistical procedures, although there are some authors who feel that a minimum of one hundred is required. Some writers argue that when one is using an experimental

design that involves two or more groups, there should be a minimum of 30 participants per group.

The power of a statistical test is the probability that the test will reject the null hypothesis when the alternative hypothesis is true; that is, the probability of not committing a Type II error. As the power analysis increases, the chance of a Type II error decreases. Power analysis can be used to calculate the minimum sample size required so that one can be reasonably likely to detect an effect of a given size. Probabilities of 0.05 (1 in 20); 0.01 (1 in 100) and 0.001(1 in 1000) increase the chances of rejecting the null hypothesis when the null hypothesis is false, decreasing the chances of a Type II error.

Priori power analysis is considered the ideal type of power analysis. Researchers specify the size of the effect to be detected; that is, the measure of the distance between H0 and H1), the α level and the desired power level (1-β) of the test. Faul, Erdfelder, Buchner & Lang (2009) have argued that priori power analyses are ideal in that low error probabilities α and β can be achieved for any specification of the effect size; however, the calculated sample sizes are usually much larger than what is considered manageable in behavioural research. They argue that other factors like financial constraints, time constraints and methodological reasons such as sample heterogeneity in the case of data aggregation across studies prohibit the use of ideal sample size. Assuming that a behavioural scientist has arrived at a maximum N that can be achieved given the institutional constraints of the research, the N will most likely be smaller than the ideal N as determined by priori power analysis. Thus the only way to arrive at a reasonable power level is to increase the chances of committing an error (Faul, *et al.*, 2009). In this study, priori statistical power calculation was not done.

Prajapati, Dunne and Armstrong (2010) recommended that if the priori power analysis was not done then the post hoc power analysis can be done. Post hoc analysis involves determining the level of statistical power achieved for a given sample size, effect size and alpha level. Therefore this type of power analyses is most useful at the end of a study. What is actually important here is that the clinically relevant effect size is specified and not the actual effect size found based on the results of the study.

3.4.3. Blinding

Blinding is a practice where study participants are prevented from knowing certain information that may somehow influence them, thereby affecting the results of the study. To ensure that the highest degree possible that the intervention is responsible for any noted differences between the two groups, people involved in the gathering or analysing data might also be blinded to knowing who is being given the treatment and who is not (Day & Altman, 2000). In this study, the participants were blinded in the sense that they did not know whether they were assigned to a control group or an experimental group.

3.5. RESEARCH INSTRUMENT

This study adopted the AUDIT (Alcohol Use Disorder Identification Test), which is a screening tool that was developed by WHO in 2001. The AUDIT which is a 10-item questionnaire provides a systematic screening (see appendices), of alcohol use (Babor & Grant, 1992; Babor, Higgins-Biddle, Saunders & Monteiro, 2001). The AUDIT is administered either as an oral interview or as a self-report questionnaire and is recommended for screening in a primary health care setting. The screening total score is considered a simple way to provide each patient with an appropriate intervention, based on the level of risk. Brief intervention strategies are recommended for non-dependent risky drinkers (Babor & Higgins-Biddle, 2001). The main advantage of using a questionnaire is that it is cheap and is also quick way to collect data from a larger group (Wilson & Sapford, 2006). The SBI methods were copied from the WHO collaborative study on brief interventions (WHO, 2001).

Alcohol use in this study was assessed using the AUDIT. The AUDIT is a measure of the prevalence of alcohol use. The AUDIT's 10 items cover the three conceptual domains of consumption, dependence symptoms, and alcohol-related consequences that were intended to parallel the World Health Organization concepts of hazardous drinking, alcohol dependence, and alcohol-related harm. Because AUDIT is reported to be less sensitive at identifying risky drinking in females (Freeborn, Polen, Hollis & Senft, 2000), the cut-off points of binge drinking

for females (Abiodun, 1996) were reduced by one unit as compared with those of males (Chinyadza, *et al*., 1993). Furthermore, an assessment of alcohol use using a cut-off score of 8 or more was made for hazardous or harmful drinking. Hazardous drinking is defined as a quantity or pattern of alcohol consumption that places patients at risk for adverse health events, while harmful drinking is defined as alcohol consumption that results in adverse events (e.g., physical or psychological harm).

3.6. VALIDITY

Validity refers to the extent to which an instrument measures what it is intended to measure (Bennet, 2003). There are two types of validity in experimental research, internal and external validity. There are different factors that are relevant to both internal and external validity.

Maximising validity and minimizing bias

The question here is: To what extent can the intervention, rather than other influences, be considered to account for differing outcomes between the treatment and control groups? If not controlled in experimental design, these factors could produce effects that will interfere with the effect of the experimental stimulus. However, in randomized control trials, by employing a control group and random assignment, the RCT design minimizes bias and threats to internal validity by equalising the conditions on all "other influences" except for the intervention. Internal validity deals with the degree to which the findings of the research can be generalized to the whole population represented by the participants.

The following threats are common to internal validity that the random assignment addresses:

- **History.** External events that occur during the course of a study that could explain why people changed. An example is a life event such as a death in the family or being laid off from work. Negative life events, such as these, may offer an alternative explanation for study outcomes.

- **Maturation.** Psychological and biological processes that occur within individuals over the course of a study that provide an alternate explanation of why they changed.
- **Selection.** Another threat to validity may occur if the experimental and control groups differ at baseline.
- **Regression to the mean.** The tendency for extreme scorers to regress to the mean on subsequent measurements.
- **Attrition.** The rate of loss of participants from the study that differs between the intervention and control groups.

Minimising threats to external validity

The question here is: To what extent can the results be extended to people, settings, and interventionists different from those used in this particular study?

These are common threats to external validity that an RCT can address. They are:

- **Sample characteristics.** This refers to the extent to which we can generalize from the study sample to the population as a whole (or the population of interest).
- **Hawthorne effect.** People tend to react differently when they know they are being observed.

In this study, the observed factors that posed a threat to the validity were history, experimental mortality and the Hawthorne effect.

- History posed a threat because there were many events that could have happened between Time 1 and Time 2. In order to minimize that threat, the distance between Time 1 and Time 2 was six months.
- Experimental mortality was minimized by using participants from the same local area.
- The Hawthorne effect was difficult to control, but participants were informed about how it was important for them not to please the researcher, and to be honest in their responses.

- Pre-testing could have sensitized participants so that their response to treatment would be different.

In this comparison, outcomes for people randomly assigned to receive the new treatment are compared with those of people assigned to receive no treatment at all. The question is whether the new treatment produces any benefit at all, over and above the change due to the passage of time or the effects of participating in a study. A challenge with this control condition is that people receiving no treatment may find their own treatment outside the bounds of the study.

3.7. RELIABILITY

Reliability is the extent to which the instrument gives the same results after re-administration; this is re test reliability. The AUDIT is currently the only instrument specifically designed to identify hazardous and harmful drinking and is valid for detecting heavy drinking also in a general population sample (Aalto, Alho, Halme & Seppä, 2009). Cronbach alpha for the AUDIT was .78 for this sample. The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization as an effective screening instrument for alcohol use problems among patients seeking primary care for other medical problems in international settings, including African countries, namely Kenya and Zimbabwe (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2005; Babor, *et al.*, 2001). It has also been widely used as a standard tool in South Africa (Peltzer, 2006; Peltzer, Davids & Njuho, 2008).

3.8. DATA COLLECTION

The 10-item Alcohol Use Disorder Identification Test (AUDIT) (Babor, *et al.*, 2001) assesses alcohol consumption level (3 items), symptoms of alcohol dependence (3 items), and problems associated with alcohol use (4 items). In South Africa, a standard drink is 12g of alcohol. Freeborn, *et al.* (2000), reported that AUDIT is less sensitive at identifying risk drinking in women, that is, five or more units of alcohol per occasion. Therefore, Freeborn, *et al.*, (2000)

recommend that the cut-off points of binge drinking for women be four units of alcohol per occasion and five units for men. Responses to items on the AUDIT are rated on a four-point Likert scale ranging from 0 to 4 for a maximum score of 40 points. Higher AUDIT scores indicate more severe levels of risk with scores of 8 indicating a tendency to problematic drinking.

In this study, the AUDIT was administered at the baseline to determine those who would be included in the study. Patients who tested positive, that is, those with a cut-off score of 8-19 on the AUDIT questionnaire were eligible to participate in the study. After randomization, participants were grouped into an experimental group and the control group. The experimental group received intervention according to their category of alcohol consumption and the control group received only a leaflet on cutting back consumption. After six months, a follow-up was done, and the AUDIT was re-administered to collect post-test data. The AUDIT was administered in Tshivenda, which is the language that is spoken by nearly all the patients at the clinic.

Data were analysed by means of statistics. Statistics is defined as the study of methods for describing and interpreting quantitative information, including techniques for organising and summarizing data, and techniques for making generalizations and inferences. Numerical data can make a valuable contribution to evaluation research. The use of statistics in evaluation serves three primary purposes, namely:

- It is used to summarize a large amount of information through measures of central tendency or dispersion.
- It provides for frequency distribution to exhibit clusters and separation of responses.
- It provides a level of confidence that the data truly are representative of the intervention.

The collected data were captured and analysed using the Statistical Package for Social Sciences (SPSS). SPSS is a set of computer programmes that can be used to do different types of

statistical analyses. The advantage of using a statistical programme is that is enables one to calculate statistics quickly and accurately. SPSS can be divided into two categories, namely, data management and data analysis procedure.

The AUDIT score served as the dependent variable and the data from the AUDIT were analysed by means of a 2 x 2 repeated measures analysis of variance (ANOVA), with Time (pre-post intervention) being the within factor and Group (experimental-control) being the between factor. Missing data owing to non-response were deleted on an analysis-by-analysis basis. The researcher used an intent-to-treat analysis by including all participants who completed baseline assessments and who were randomized to intervention conditions. Individual cell sizes vary owing to missing values. Statistical significance was defined using the conventional value of $p<.05$.

Retention and attrition of participants

A total of 140 patients (35 women and 105 men, of mean age 30.7 years, SD=6.5 years, ranging from 20 to 47 years) enrolled in the study, completed baseline assessments, and were randomized to two conditions. All participants in the experimental condition (N=70), could be followed up (N=70), while participants in the control condition (N=70) 58 completed the follow-up interview (attrition rate of 17.1%). The overall attrition rate was 8.6%.

3.9. THE INTERVENTION

After the screening and assignment of participants to the control group and experimental group, those assigned to the control group were provided with the self-help leaflets on cutting back. They received no counselling. For ethical reasons only the leaflet that deals with cutting back consumption was given to this group.

The experimental group received the intervention. The brief intervention protocol indicates four components, namely: ask about alcohol use, assess, advise and assist. This includes direct feedback

about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (WHO, 2001).

According to the WHO protocol of brief intervention, after the administration of the AUDIT, the positive results are indicative of the next step which is provision of an appropriate intervention that meets the needs of each patient. Patients who score negatively in the AUDIT should be reminded about the benefits of low risk drinking or abstinence and told not to drink in certain circumstances such as when operating a vehicle or machinery, when pregnant or when considering pregnancy, if a contra-indicated medical condition is present or after using certain medications such as sedatives, analgesics and selected antihypertensive medication (WHO, 2001).

There are four levels of risks identified in the protocol and are as follows:

Zone I refers to low-risk drinking or abstinence.

Zone II consists of alcohol use in excess of low-risk guidelines and considered hazardous. It is generally indicated when the AUDIT score is between 8 and 15. A brief intervention using simple advice and patient education materials is the most appropriate course of action for these patients (WHO, 2001).

Zone III consists of alcohol use that is considered harmful in that the patient has started to experience problems because of alcohol use. The AUDIT score in this category is between 16 and 19. A combination of simple advice, brief counselling and continued monitoring with further diagnostic evaluation if the patient fails to respond or is suspected of possible alcohol dependence (WHO, 2001).

Zone IV is suggested by an AUDIT score in excess of 20. These patients are to be referred to a specialist for diagnostic evaluation and possible treatment for possible alcohol dependence. If the specialist services are not available, these patients can be managed in primary care. Patients can be managed first at the lowest level of intervention by their AUDIT score. If they do not respond to the initial intervention, they should be referred to the next level of care (WHO, 2001).

Brief intervention for hazardous and harmful drinking constitutes a variety of activities characterized by their low intensity and short duration. They range from 5 minutes of simple advice about how to reduce hazardous drinking to several sessions of brief counselling to address more complicated conditions. Intended to provide early intervention before or soon after the onset of alcohol-related problems, brief interventions consist of feedback of screening data designed to increase motivation to change drinking behaviour as well as simple advice, health education, skill building and practical suggestions. The elements of brief intervention protocol are as follows: present screening results, identify risks and discuss consequences, provide medical advice, solicit patient commitment, identify goals, such as reduce drinking or abstinence and give advice and encouragement (WHO, 2001).

In this study, participants were randomized and allocated to the experimental group, completed AUDIT at baseline and received brief intervention for alcohol reduction. The goals of brief intervention were to identify alcohol-related problems, to provide sensible drinking leaflets emphasizing the idea of sensible drinking limits and to make sure that patients realize that they are in the low-risk drinking category, and to provide feedback on their alcohol use,

The participants whose alcohol consumption was categorized as Zone II level of risk received a 10 minute session, which involved giving them feedback on their drinking behaviour as indicated by their AUDIT score, encouraging them that they had not yet developed problems related to alcohol, but that if they kept on drinking the way they were drinking, they were likely to develop alcohol-related problems. During the session, they were given simple advice about how they could reduce their hazardous drinking. Basically, clients were provided with information about sensible drinking and the effects of drinking.

The participants whose alcohol consumption was consider as Zone III level of risk received a 25 minute session of brief counselling. The session comprised the basic elements of brief intervention which involved providing participants with feedback on their drinking behaviour as indicated by their AUDIT score, identifying risks, discussing consequences of their alcohol consumption, providing medical advice, soliciting their commitment, identifying their goal of either reducing consumption or abstinence, and then giving them advice and encouragement. They were

educated the effects of alcohol on one's body and other areas that are problematic owing to alcohol use. They were also assessed at that point in terms of their readiness to change their behaviour. This was done using a scale of 1-10 to determine how ready they were to change the way they had been drinking. Depending on the readiness to change, the drinking behaviour from pre-contemplation and/or contemplation, the researcher then talked about how to cut back or stop drinking. The researcher helped the clients to identify situations that might tempt them to go back to this unhealthy drinking behaviour, and together with the researcher, the clients devised strategies to deal with those situations. Then the clients were also prepared in terms of how to deal with relapses and encouraged to return if there were any challenges. Clients were also informed that they would be contacted by the researcher after six months, to check on them and how they had been progressing since this intervention.

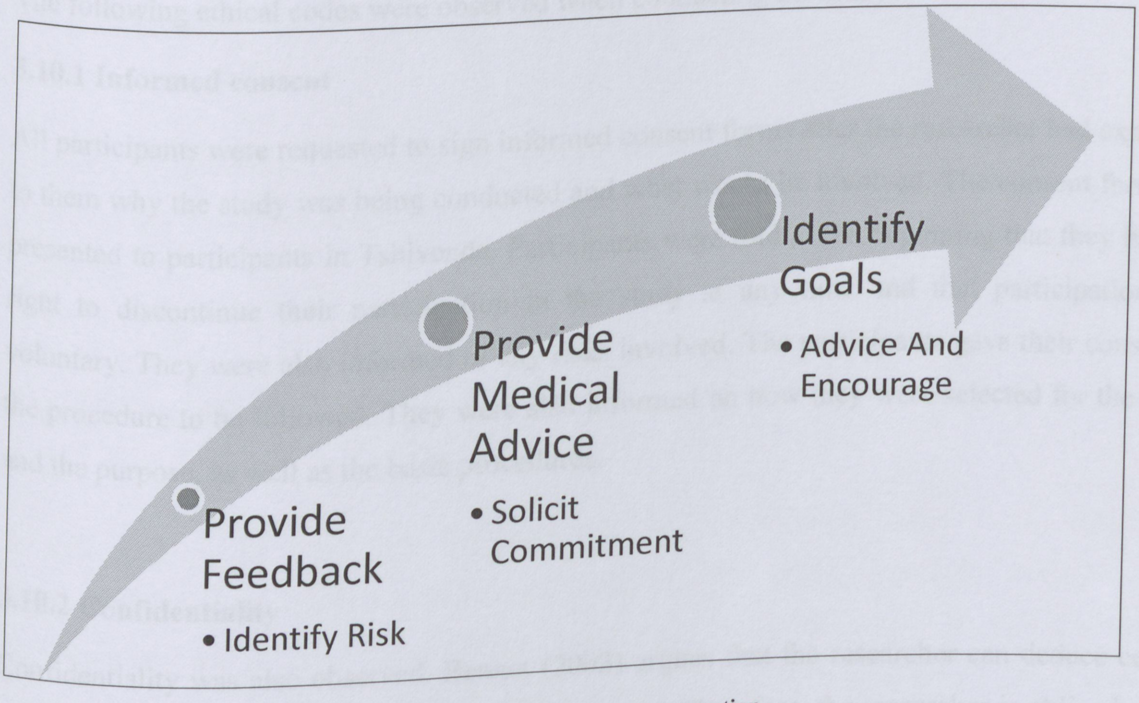

Figure 3.2. The process followed from administering AUDIT to intervention

Post intervention

The AUDIT was re-administered to 132 participants six months after the intervention. All participants (N=70) who were in the experimental group were re-assessed and only 62 from the

control group were re-assessed. Follow-up or re-assessment was done at the patients' homes and some were done telephonically. The assessment was done to determine whether the intervention had led to any behavioural change. It was assumed that after the intervention, if the control group showed no change, and the experimental group showed substantial change, then the change could be due to the intervention. The pre- and post-tests were used to evaluate the effectiveness of brief intervention. Data was collected from both groups at two different points in time, Time 1 (pre-test) and Time 2 (post-test). The disadvantage of the pre-test and post-test is that the pre-test often sensitizes participants to the post-test questions, when the same questions are used for both pre-test and post-test.

3.10. ETHICS

The following ethical codes were observed when conducting the study:

3.10.1 Informed consent

All participants were requested to sign informed consent forms after the researcher had explained to them why the study was being conducted and what would be involved. The consent form was presented to participants in Tshivenda. Participants were told at the beginning that they had the right to discontinue their participation in the study at any time and that participation was voluntary. They were also informed of any risks involved. The participants gave their consent to the procedure to be followed. They were also informed on how they were selected for the study and the purpose, as well as the basic procedures.

3.10.2 Confidentiality

Confidentiality was also observed. Bennet (2003) argues that the researcher can deduce certain personal information from the participants' responses. Therefore, the researcher is obliged not to divulge the information to any person. There are three main reasons for declaring confidentiality. It improves the quality and honesty of responses, especially on sensitive issues. It also encourages participation in the study and therefore increases the representivity of the sample, and lastly confidentiality is offered to protect a person's privacy (Weiten, 2011).

In this study, numbers were assigned to questionnaires which were linked to the names of the participants. Their names, with the corresponding number on the questionnaire, were written in a book and this information was kept in a safe place. The researcher was the only person who had access to that book. This was done so that when the participants had completed the post-test questionnaire, the researcher would be able to match the participants' numbers and names so that they could complete the same questionnaire. Study findings were honestly reported.

3.10.3 Compensation

Participants did not receive any remuneration for completing the baseline and for returning to the clinic for the follow-up assessment. Following the six-month follow-up, participants in the health education control group were offered the experimental alcohol reduction intervention.

All study procedures were approved by the University of Venda Research Ethics Committee and the Limpopo Provincial Department of Health in South Africa, as well as District and clinic authorities.

3.11. CONCLUSION

In this chapter, the researcher discussed the type of research design used, namely the experimental or randomized control trial used in this study. Although there are some disadvantages associated with randomized control trials, as with any other designs, this design is a powerful tool for conducting an intervention study. Different threats to validity were identified. Data were collected at pre-test and at post-test levels, and an intervention was conducted with the experimental group before the second assessment. The following chapter presents the findings of the study.

CHAPTER 4: FINDINGS

4.1. INTRODUCTION

In this chapter the findings of this study are presented.

4.2. DATA ANALYSIS

AUDIT score results

Paired samples tests analyses found a significant reduction of the AUDIT score in both the intervention (t=15.47; P<0.001) and the control (t=11.28; P<0.001) group, although the experimental group had a higher reduction than the control group. Using ANOVA, there was no overall significant intervention effect between experimental and control groups at a six month follow-up (see Table 4.1).

Table 4.1: AUDIT score reduction outcomes among participants at baseline and 6 months follow-up following intervention (N=140)

	Experimental	Control	ANOVA	
	M (SD)	M (SD)	F	P
AUDIT score*			.405	0.526
Baseline	13.1 (3.8)	12.7 (3.2)		
Six month follow-up	7.0 (3.6)	8.1 (4.3)		

At baseline

Participants in both control group and experimental group were categorized into 3 zones, that is, zone II, III and IV.

Post intervention

Participants were re-assessed using the AUDIT questionnaire six months after the intervention. The results of the post-test are shown below.

The sample included 132 patients, 70 in the experimental group and 62 in the control group. The mean age of the experimental group was 30.8 (SD=6.5) and the control group 30.6 (SD=6.6), t =.23, p =.815. There were also no significant differences of other demographic variables: In the experimental group there were 54 men and 16 women, and in the control group 51 men and 19 women (χ^2=0.34, P=.558).

Participants were categorized according to the zones. The results indicate that there was a shift in drinking behaviour, with a new category of drinkers that was not there during pre-testing, namely zone1. Even though the control group did not receive any intervention, there was change in the drinking behaviour. Participants in the experimental group received intervention and the results indicate that there was also a change in their drinking behaviour.

Zone I- This is for people who scored 1-7 in the AUDIT. The current study only included the low risk drinkers. People who fell under this category at baseline were not included in the study. At the six month follow-up, those participants who were risky drinkers had moved from other zones to this zone. There were 17 males in the control group and 10 females from the control group, while 32 (24.4%) males and 11 (8.3%) females were in the experimental group. These participants were referred to as sensible drinkers. Normally these people drink to relax or socialize. Their intervention entailed giving them feedback on their drinking and encouraging them not to go

beyond this way of drinking, as well as providing them with information on the effect of drinking alcohol.

Zone II- At baseline, the number of participants who were found eligible to participate in this study were 97; there were 68 males (48.5%) and 29 females (20.7%) who scored 8-15 on the AUDIT. At six months post intervention, there were 22 (16.6%) males and five (3.8%) females in the control group, while 20 (15.2%) males and four (3.0%) females were in the experimental group. They are an at-risk group; that is, if they continue to drink the way they are, they might start to experience problems owing to their alcohol intake. Their intervention entailed giving them feedback on their drinking and providing them with information on the effect of drinking alcohol as well as talking to them about cutting back.

Zone III- At baseline, participants who were found eligible to participate in this study were 38, 19 males (13.5%) and 2 females (1.4%) in control group and 14 males and 3 females in the experimental group. The participants scored 16-19 on the AUDIT. At six months post intervention, there were four (3.0%) males and three (2.3%) females in the control group, while two (1.5%) males and no (0%) females were in the experimental group. Their intervention lasted for 30 minutes. They were given feedback on their drinking, information on the effect of drinking alcohol and information on how to reduce their drinking. After providing them with the information the researcher assessed their readiness to change their drinking behaviour. Depending on their readiness to change, the researcher then helped them to plan their behaviour change and then to action.

Zone IV- This group is referred to as the dependency drinkers. These people had already developed some psychological dependence on alcohol and were unable to control their drinking. At baseline, participants who were found eligible to participate in this study were one male (%) and no females (0%) who scored 8-15 on the AUDIT. At six months post intervention there were one (0.75%) male and no (0%) females in the control group while no (0%) males and one (0.75%)

female were in the experimental group. All the processes that were followed above apply with regard to these groups. The group was then referred to hospital for further management.

When classifying the consumption behaviour by AUDIT score, comparing before Brief Intervention and at six months follow-up, and among the experimental group at before Brief Intervention among the 70 risky drinkers, 42 were found to be hazardous drinkers, seven were harmful drinkers and one was a possible alcohol dependent drinker. After a six month interval among the experimental group consisting of 70 risky drinkers, 43 reduced their drinking to low risk drinking, 24 were hazardous drinkers, two were harmful drinkers and one remained a possible alcohol dependent drinker. It is evident that after the intervention at the six month interval, there was a decrease in drinking behaviour from high risk to low risk drinking.

As far as consumption behaviour in the control group is concerned, at baseline there were 70 risky drinkers, of these 48 were hazardous drinkers, 21 were harmful drinkers and one was a possible alcohol dependent drinker. After the intervention at the six month interval, 62 participants were assessed. At the six month follow-up among the 62 risky drinkers in the control group 27 had reduced their drinking to that of low risk drinkers, 27 were hazardous drinkers, seven were harmful drinkers and one remained a possible alcohol dependent. Noticeably, 27 risky drinkers had become low risk drinkers.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

In this chapter the findings of the study and literature control are presented.

5.2. Discussion

It emerged from this study that there was a significant reduction in the drinking patterns of both groups. Other randomized controlled trial studies had previously found that once the participants had been subjected to questions about their behaviour, they changed their behaviour whether exposed to intervention or not. However, it is not surprising that findings like this reveal behaviour changes even in the control group; this has been confirmed by previous studies. A study by Godin, Bélanger-Gravel, Amireault, Vohl, and Pérusse (2011) discovered that asking questions about cognition regarding physical activity positively influenced subsequent self-reported participation in the risky drinkers' behaviour over a three-month period. There could be different reasons why people change their behaviour post intervention, whether they are exposed to intervention or not. Some previous researchers have argued that the change in behaviour could be due to mere-measurement effect. According to French and Sutton (2010), this mere-measurement effect is also more likely to be detected when health-related behaviours are subjectively assessed.

A study conducted by Hermansson, Helander, Brandt, Huss and Roonberg (2010) found no significant differences between intervention groups and control groups. They concluded that alcohol screening may in itself cause reduction in the drinking. In agreement with a previous observation only very few tested positive for both baseline and follow-up alcohol screening. These results are also supported by this study. Of those enrolled in this study based on a positive alcohol screening results who also attended follow-up session after six months, only about 62 participants tested positive. Those allocated to the control group received no feedback about their

screening results; this may suggest that alcohol screening can in itself lead to a reduction in drinking.

Previous studies have reported that assessing only intention by means of a few items, changes subsequent performance of studied behaviours at follow-up (Fitzsimons & Williams, 2000; Sprott, Smith, Spangenberg & Freson, 2004; Levav & Fitzsimons, 2006), including physical activity (Williams, Block & Fitzsimons, 2006).

The precise mechanism behind the mere-measurement effect is still a matter of debate (French & Sutton, 2010). At this time, the dominant explanation of this effect is that asking behavioural intention questions heightens the accessibility of the person's attitude towards the behaviour, which in turns increases the likelihood that the behaviour will be adopted (Morwitz & Fitzsimons, 2004).

Other researchers have attributed this to the possibility of a cross-over effect that is present. Beich, Gannik, Saelan, and Thorsen (2007) argue that having been primed by the screening questionnaire, some control patients may have become more aware of their drinking and may be more open to discussing alcohol use issues with their doctors. In their study, they tried to minimize this effect by early randomization of all participants. This made it possible for them to avoid any feedback on the screening result being given to control-group patients. Controls merely took place in a rolling survey, and neither the patient nor the doctor knew about the screening result at any point.

Other researchers argue that changes in the measured behaviour of the control group should be viewed with caution because there might be different reasons that the control group behaviour changes even if there was no intervention. Many factors can be attributed to the change in the behaviour of the control group other than the assessment impact of clinical trials.

a) Blinding of study purpose (investigation of changes in alcohol consumption)

The previous researchers argue that a lack of blinding of subjects regarding the purpose of the studying can trigger social desirability bias, defined as the inclination of participants to give the researcher what they think the study is designed to find (Babor, McRee, Kasselbaum, Grimaldi, Ahmed & Bray, 2007; Kypri, 2007; Nye, Agostineli & Smith, 1997). As Daeppen, Gaume, Bady, Yersin, Calmes, Givel & Gmel (2007) maintain "there is reason to expect that these participants may have been aware of the nature of the study and adjusted the self-report in some manner".

b) Sample mix

The other reason for a positive change in a control group is attributed to sample mix. The previous researchers argue that enrolment may be affected by design elements, such as re-imbursement level or time requirements for completion of study procedures. In a non-treatment population, telegraphing the purpose of the study in consent form may predispose only clients who are already considering change to enrolling. They argue that it is common in the clinical research setting for patients to conceal substance abuse for fear that labelling might negatively influence a practitioner's willingness to provide medical care. Moss (2007) cites social control theory as a contributing factor to this phenomenon and social learning theory as the context for consequences of non-blinding.

The sample mix for brief alcohol intervention studies is also affected by the rate of the capture of eligible patients. Refusal to enrol in studies is more common in the primary care settings where patients are identified by screening, and alcohol use is rarely the presenting problem. In particular, small samples and randomization without blocking for problem intensity can result in a skewed distribution of acuity. If the sample is weighed toward the low end of the scale (high risk drinkers), there will naturally be fluctuations over time in consumption if the sample consists of primarily dependent drinkers who consume at outlier levels, and there will be a greater tendency to observe variations in measurement as a result of regression to the mean (Morton & Toggerson, 2005).

Moss, (2007) argued that assessment can raise an individual's awareness of risky drinking, initiate self-monitoring and lead to recognition of a discrepancy between current behaviour and a personal normative standard, communicate implicitly personal responsibility and impel a need for a change creating bias towards the null (Kypri, 2007). This type of connection is a final component of motivational intervention to reduce unhealthy alcohol use.

c) Procedures for control condition discharge

The argument here is that brief interventions in clinical studies require the control groups to receive a combination of normative feedback, and advice or referral. Standards of clinical care require that results be addressed by practitioners and in many countries institutional review boards require that control groups receive advice and/or referral resources. (Epstain, Drapin, Yusko, Cook, McCrady & Jensen, 2005; Clifford & Maisto, 2000).

d) Regression to mean

Alcohol intake varies over time and by season, except in the most dependent of drinkers (Dawson & Room, 2001). Regression to the mean at the time of repeated measurement may be a longer factor in self-reported declines in alcohol intake of control groups. Regression to the mean is to be expected, because outcomes conditions that vary over time are being measured. Measuring these outcomes with, admittedly imperfect instruments, an outlier value at enrolment is likely to be expected with a more moderate value at follow-up. Because of this variation, there is likely to be measurement bias because observations at Time 1 and at Time 2 may not reflect a true distribution (Morton & Toggerson, 2005; Finney, 2005).

e) Measurement/analysis issues

Variance in alcohol consumption end point is often larger with skewed distribution or outliers that may reduce statistical power and can complicate analyses. The treatment of outliers and transformation of data to account for skewedness must be considered for consumption endpoints. In order to limit inadvertent moderators of control group drinking, study participants must be blinded. Daeppen *et al*, (2007). Using a briefer version of a standardized instrument, that is,

replacing the long questionnaire AUDIT with also validated AUDT C which has three questions Kypri (2007). Nye, Agostineli and Smit (1999) suggest that normative feedback must be avoided, so as not to create heightened awareness that mimics intervention. Kypri (2007) proposes attention to a randomization procedure that will ensure a wide range of subjects and thus limit potential for bias; Morton & Toggerson (2005) stresses the importance of avoiding selection of the most severe cases in order to avoid pitfalls associated with regression to the mean.

In the current study, however, the experimental group had a higher reduction than the control group. This may be attributed to the brief intervention that was used. However, this analysis needs to be interpreted with caution. Although, overall, the data are consistent with the intervention being effective, the size of the true effect was probably smaller than the researcher had anticipated.

In the present study, brief intervention did not have an additional effect in comparison with the AUDIT screening. Most published brief intervention studies that did not find any additional benefit of brief intervention showed a decrease in alcohol use both in experimental and control groups. This parallel decrease was explained either by a Hawthorne effect, a natural history effect, or by regression to the mean (Beich, *et al*., 2007). A study conducted by Beich, *et al.* (2007) did not find any decrease in alcohol use in either group. This can be explained by the fact that they included 83% of all patients screening positive in the AUDIT, and that the intervention was provided without delay as recommended (Babor & Grant, 1992; Babor, *et al*., 2001). In the current study, this is possibly due to the lower impact of brief intervention in this target population.

Brief intervention has previously been found to be less efficient among alcohol dependents (Bien, *et al*., 1993; Madras, Compton, Avula, Stegbauer, Stein & Clark, 2009). Furthermore, lack of differences between interventions may simply show that screening alcohol use with AUDIT and providing feedback about the score has a positive impact on alcohol-drinking behaviour (McCambridge & Day, 2008). This phenomenon has been suggested by different studies and could correspond with what Jenkins, McAlaney and McCambridge (2009) call reactivity assessment. The

results were also possibly due to spontaneous adaptations of the naturalistic treatment as usually received by both groups following AUDIT screening or BI.

The results also indicate that the overall effect of intervention in the intervention group was not statistically significant. This means that even though it cannot be disputed that the intervention had an impact, the impact was not very great or was not very significant compared to the change in behaviour that occurred in the control group. In their study Beich, *et al*., (2007) who screened only 6897 patients, found 1087 (15.8%) risky drinkers, of whom 906 (13.1%) non-dependent drinkers became study participants and 537 (7.8%) were followed up. In another primary health care trial Senft, Polen, Freeborn & Hollis (1997) used the AUDIT to define the trial group, and included 78% of those who screened positive. The main intervention was not delivered by the doctor, but by a skilled counsellor. Nevertheless, only a modest, temporary reduction in the drinking frequency, but not in the overall amount of alcohol consumption, was achieved in this study.

Several systematic reviews have confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals (Bien, *et al*., 1993; Kahan, Wilson & Becker, 1995; Wilk, *et al*., 1997; Poikolainen, 1999; Moyer, *et al*., 2002; Ballesteros, Gonzalez-Pinto, Querejeta & Arino, 2004). Until lately, little attention has been paid to the issue of the external validity of these results (Edwards & Rollnick, 1997; Beich, *et al*., 2007. A systematic review (Berltholet, Daeppen, Weitlisbach, Fleming, Burnand, 2005) on the efficacy of brief alcohol intervention concluded that intervention could reduce alcohol consumption, but that the effectiveness of such interventions in daily practice remains unexplored.

This gap between efficacy and effectiveness has also been recognised by some of the pioneers of brief intervention (Heather & Wallace, 2003). The proposals to overcome this gap have, so far, focused on the search for even better screening tools and better implementation strategies for the SBI programme.

It is not uncommon in randomized control studies to find that there were changes in both the interventions group and control group at post-test. Previous researchers (McCambridge & Day,

screening provokes contemplation about drinking and makes the patient aware of his or her alcohol intake in a way that might not occur otherwise. In the first study specifically to examine the direct effects of screening, McCambridge and Day (2008) showed that being screened with AUDIT with no subsequent BI or other intervention led to reduced self-reported hazardous drinking, with the effect sizes being similar to the known effects of BIs. They argued that this was a "remarkable demonstration of the potency of alcohol screening as an intervention in its own right".

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

In the current study, paired samples tests analyses found a significant reduction of the AUDIT score in both experimental (t=15.47; P<0.001) and control (t=11.28; P<0.001) groups; although the experimental group had a higher reduction than the control group. Using ANOVA, there was overall no significant intervention effect between experimental and control conditions at six months follow-up (see Table 4.1). Findings related to this study were also observed in other studies. Areesantichai, Iamsupasit, Marsden, Perngparn and Taneepanichskul (2010) did the t-test comparing the change of AUDIT score difference at baseline and after the follow-up at each intervention. After the follow-up in two communities, there was a significant difference of the total score at .001. Their findings were also consistent with the previous research findings like those of Bien, *et al.* (1993); and Moyer, *et al.* (2002) which confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals.

5.5. CONCLUSION

Different authors maintain that if both the control and the experimental groups are similar before the intervention, and if only the experimental group receives intervention, differences after

intervention must be attributed to the intervention (Bennet, 2003). However, Kazdin (1980) argues that even groups which are similar at the beginning might become different owing to other reasons other than the effects of the intervention.

In this study, the experimental group showed a significant change in their drinking behaviour after the brief intervention. What is surprising is that even those in the control group also changed their drinking behaviour. There could be different reasons for this improvement. Firstly, since they were assessed at the primary health care clinics they could have been told about reducing their drinking by the nurses during their consultation. Secondly, since they were provided with information on cut-back leaflets they could have thought about it and changed their behaviour. Thirdly, the interaction in the community between the control group and the experimental group could also have led them to share information between the two tests.

CHAPTER 6: SUMMARY OF FINDINGS, LIMITATIONS OF THE STUDY, RECOMMENDATIONS AND CONCLUSION

6.1. INTRODUCTION

This chapter presents the aims and objectives of the study, hypotheses, summary of findings, limitations of the study, recommendations which are based on the findings of the study, as well as the concluding remarks.

6.2. SUMMARY OF FINDINGS

The main aim of the study was to evaluate the effectiveness of the Screening and Brief Intervention for risky alcohol use in the primary health care setting.

Specifically, the objectives of the study were:

- To pre-test the use of alcohol using the AUDIT;

The AUDIT questionnaire was pre-tested on two groups, the experimental group and the control group. At baseline, the AUDIT was administered to 140 participants divided into two groups of 70 each. The findings indicated that in the control group, 54.2% males and 14.1% females fell within Zone 2 category; 27.1% males and 2.8% females were in Zone 3; and 1.4% males and 0% females into Zone 4. Among the experimental group, 42.8% males and 27.1% females were found to be Zone 2 drinkers; 20% males and 4.2% females were in Zone 3; and 4.2% males and 1.4% females fell into Zone 4.

- To implement the SBI;

Brief intervention was conducted with the experimental group. Seventy participants received the intervention and the control group was provided only with the leaflet on cutting back. The results

indicated that among the control group, 54.2 % of the males and 14.1 % of the females were hazardous drinkers; 27.1% of the males and 2.8% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 42.8% of the males and 27.1% of the females were found to be hazardous drinkers, while 20% of the males and of the 4.2% females were found to be harmful drinkers, and 4.2% of the males and 1.4% of the females were possibly alcohol dependent.

- To post-test the use of alcohol six months after the intervention.

Six months after intervention, the AUDIT questionnaire was re-administered to both control and experimental groups. This was done to assess their alcohol intake after the intervention as well as to assess if the intervention done was successful. The results indicated a decrease in alcohol consumption in both groups. At baseline, all the participants were grouped in the zones, from Zone 2 to Zone 4 and at follow-up they were grouped from Zone1 to Zone 4. The results indicated that among the control group, 24.2% of the males and 14.2% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 31.4% of the males and 7.1% of the females were hazardous drinkers; 5.7% of the males and 4.2% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 45.7% of the males and 15.7% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 28.5% of the males and 4.2% of the females were found to be hazardous drinkers, while 2.8% of the males were found to be harmful drinkers and 1.4% of the females were possibly alcohol dependent.

The findings of this study show that the screening and brief intervention for alcohol risky drinking was effective as it reduced the level of drinking after the intervention. As in previous studies, it was also found that by asking people questions related to their behaviour, people changed that particular behaviour.

6.3. LIMITATIONS OF THE STUDY

The limitation was that the distance in time between the pre-test and post-test was six months and this threatened the internal validity of the study because some of the participants could not be reached to do the post-test.

There are different factors such as lack of time, fatigue, personal beliefs and other personal priorities that affect the way participants cooperate. The challenge that the researcher experienced during data collection was that the participants had to come to the primary health care clinic for other ailments and some complained that participating in this study was going to delay them. After it was explained that the questionnaire was not that long and that they would complete the questionnaires in the cubicle while waiting to see the sister, they cooperated.

6.4. RECOMMENDATIONS

The researcher recommends that, since the findings of this study indicate that the screening and brief intervention is effective in reducing alcohol consumption, the SBI be adopted as a compulsory routine screening at primary health care clinics. The compulsory screening can be adopted to help identify potential at-risk drinkers, for instance, mental health care users. The early identification of potential problem drinkers and intervention for mental health care users might help to prevent the relapse and revolving door syndrome. This is because most of the mental health care users who are in and out of the hospital also use alcohol.

In ante natal care, SBI can be done as part of the nurses' history taking. This will help reduce the risk of children born with Foetal Alcohol Syndrome. It will also help reduce maternal and infant death which is one of the millennium developmental goals.

In the care for and treatment of patients with chronic conditions, for example, diabetes and hypertension, compulsory SBI is also important because the majority of patients with chronic conditions get their treatment at the primary health care clinic instead of at private facilities. Most patients on chronic medication for diabetes and hypertension lead unhealthy lifestyles that include risky drinking while taking medication. Compulsory SBI will assist identify those who need intervention and continuous support.

Compulsory SBI is also necessary for all individuals receiving medical attention in any given setting even if it is not at the primary health care clinic, for example, in major companies where they provide health care services on-site. The compulsory SBI will help companies to identify those people who need intervention and they can provide support.

The compulsory screening can also be adopted in other settings that are not necessarily health related, for example, as part of issuing drivers' licenses and in the renewal of those licenses in order to prevent unnecessary accidents.

In trauma centres victims of sexual gender based violence (SGBV) are taken for further management. As part of a holistic approach to ensure a health body and mind, it is imperative to screen for risky alcohol use. This is basically because previous researchers and authors have indicated that alcohol misuse has many negative consequences, ranging from health risks, financial difficulties, trouble with the law, social relationships problems, and family problems.

Policy makers to make policies that will ensure that screening and brief intervention with regard to alcohol use are made compulsory in primary health care settings.

It can also be integrated in the training of all health care professionals

There is a need to get the cooperation of compulsory SBI health care professionals for SBI to be effective at primary health care level. The following implementation programme is recommended:

6.4.1. Background

Screening is done using the AUDIT questionnaire to find out about people's use of alcohol and it was developed by World Health Organization. The AUDIT can be used at primary health care clinics because primary health care is the first contact with the health system for people seeking care, and most people attend primary health care facilities at least once per year.

Many common problems seen at primary health care settings may be made worse by alcohol use. SBI provides an opportunity to educate patients about the risk of excessive alcohol use. There is evidence that the use of alcohol is prevalent throughout the world and is associated with a significant public health burden. Excessive alcohol use is also a risk factor for a wide variety of social, financial, legal and relationship problems for individuals and their families.

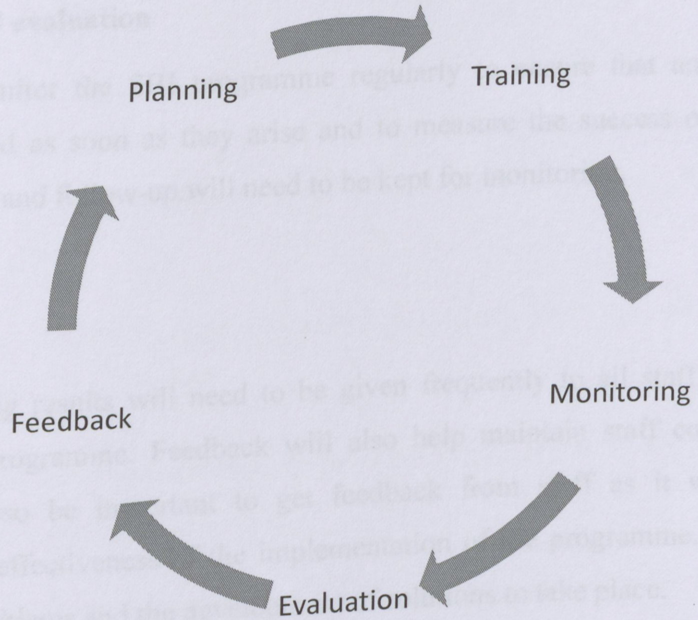

Figure 6.1: The process of implementing the SBI programme at primary health care centres

6.4.2. Planning

When implementing a programme like SBI, it is important for the staff members who are involved to understand the reasons for the programme, to feel a sense of ownership and enthusiasm for its implementation, understand their roles and be committed to making it work. There must be a coordinator for the implementation of the programme. This person will be responsible for making sure that all staff members understand their roles and responsibilities and that all the necessary tasks are carried out.

6.4.3. Training

Staff must be trained to implement the SBI programme. Effective training will enable staff members to discuss their roles and functions responsibly and also their attitudes towards screening and early intervention for harmful drinking. Training also provides opportunities for role play and supervised practice in administering AUDIT and carrying out follow-up activities.

6.4.4. Monitoring and evaluation

It is important to monitor the SBI programme regularly to ensure that any implementation problems are addressed as soon as they arise and to measure the success of the programme. Records of SBI details and follow-up will need to be kept for monitoring.

6.4.5. Feedback

Feedback of monitoring results will need to be given frequently to all staff for the on-going improvement of the programme. Feedback will also help maintain staff commitment to the programme. It will also be important to get feedback from staff as it will help provide information about the effectiveness of the implementation of the programme. This will enable the identification of problems and the development of solutions to take place.

6.5. CONCLUSION

The aims and objectives of this study were achieved. A research instrument was designed and used for both pre-test and post-test assessments. The hypothesis that was formulated and tested was supported by the study and one hypothesis was not supported.

This chapter reported the limitations that were observed. They included the drop out of some participants. Certain gaps in the research methodology were identified. These included issues related to the instrument. Four areas in which improvements can be made were listed. Recommendations based on the findings of the study were made.

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Appendix 1.

AUDIT Questionnaire

The Alcohol Use Disorders Identification Test (AUDIT): Interview Version

Dear Participant,
As part of my research I am conducting a study on the prevalence of alcohol use among patients who are coming to the clinic for consultation for any other illness. This information is important because it will assist us to tailor intervention according to your needs. To help me do this, now I would like to ask you some questions about your use of alcohol beverages during the past twelve months. Your answers to these questions will be treated in strict confidence. No details of your name will be written on this questionnaire.

Age: ____ years **Gender:** [1] Male [2] Female **Date:** ____/____/______

A standard drink is:

A single tot of spirits (whisky, gin & vodka) (e.g., 25ml at 43%)	**1.1.1.1.1** A small glass of liqueur or aperitif *(e.g., 25ml at 30%)*	
1 can of ordinary beer (e.g., 340ml at 5%)	*1 glass of wine (e.g., 120ml at 12%)*	*Cartoon of ordinary commercial sorghum beer (e.g., 500ml at 3%)*

1. How often do you have a drink containing alcohol in the past 12 months?
   - (0) Never [*skip to Qs 9-10*] ☐
   - (1) Monthly or less ☐
   - (2) 2 to 4 times a month ☐
   - (3) 2 to 3 times a weeks ☐
   - (4) 4 or more times a weeks ☐ [____]

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   - (0) 1or 2 ☐
   - (1) 3or 4 ☐
   - (2) 5or 6 ☐
   - (3) 7, 8, or 9 ☐
   - (4) 10 or more ☐ [____]

3. How often do you have (for men) five or more and (for women) four or more drinks on one occasion?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [____]

Skip to question 9 and 10 if Total Score for Qs 2 and 3 is =0

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [____]

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [____]

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [____]

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [____]

8. How often during the last year have you been unable to remember what happened the night before because you had been drunk?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [____]

9. Have you or someone else been injured as a result of your drinking?
   - (0) No ☐
   - (2) Yes, but not in the last year ☐
   - (4) Yes, during the last year ☐ [____]

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you to cut down?
    - (0) No ☐
    - (2) Yes, but not in the last year ☐
    - (4) Yes, during the last year ☐ [____]

Record total of specific items here [____]

Appendix 2: Consent letter and consent form

Consent letter

Dear Respondent,

I am Mpho Ramarumo from the University of Venda. I am conducting research regarding Evaluation of the screening and brief intervention for risky alcohol use in primary health care clinic in Sibasa local area in Thulamela municipality: A randomized controlled trial. You are kindly requested to participate in this study by responding to the few questions that I would like to ask you. The study is conducted for educational purposes.

Please note that participation is voluntary and you do not have to take part in this study. However, I would really appreciate it if you would share your thoughts with me. If you choose to participate you may still quit at any time, there will be no penalties and you will not be prejudiced in any way.

I will not record your name and the information you provide will remain confidential and there will be no repercussions from the answers you give. The interview will last around 10 – 15 minutes. I know that you cannot be absolutely certain about some of the answers but I ask that you be as open and honest as possible in answering these questions. Some questions may be personal in nature and I will also ask some questions that may involve thinking about and recalling the past or thinking about the future. I hope that does not make you feel too uncomfortable

Thank you.

Consent Form

Consent form

I hereby agree to participate in the research on -- -------------------------- I understand that I am participating freely and without being forced in any way to do so. I also understand that I can quit at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the interview and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to me and my community on the results of the completed research.

Signature of Respondent Date: ----------------------------

Signature of Researcher Date: -----------------------------

Telephone Number:

Evaluation of the screening and brief intervention for risky alcohol use in Sibasa primary health care clinic in Thulamela Municipality: A randomized controlled trial.

by Mpho Ramarumo

Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology at the University of Venda

Promoter: Prof. K. Peltzer

Co-promoter: Prof. L.B. Khoza

Submitted on April 2014

DECLARATION

I, Mpho Ramarumo, hereby declare that the thesis for the Doctorate of Philosophy degree in Psychology at the University of Venda, hereby submitted by me, has not previously been submitted for a degree at this or any other institution, and that it is my own work in design and execution, and that all reference material contained therein has been duly acknowledged.

Signature

23/4/2014

Date

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DEDICATION

I dedicate this study to my dear family who have been there for me and supported me throughout;

My dear husband who was so supportive and encouraging through it all;

My boys Thembuluwo and Zwothezwiunakele who had to compromise and understand why I had to be absent from the house for many days while I was working on this thesis;

My late father and mother, Mr. Ntsudzuluseni Amos and Mrs. Mashudu Grace Ramarumo, who encouraged me and believed in me from the time I started school; and

My siblings, Tendani, Zwidofhela, Takalani and Ntsudzuluseni. Thank you all for your support.

ABSTRACT

Background

The use of alcohol as a drug is common in many societies, and has a history stretching back for millennia (Rodseth, 2012). There is a well-developed culture surrounding the production and consumption of alcoholic beverages, as they form part of celebrations, meals and religious rituals and frequently form the hub of social interaction (Rodseth, 2012). In a review of the data from national surveys carried out in South Africa, Peltzer and Ramlagan (2009) found that binge drinking was between 7% and 11% and risky drinking, 6.9%. South Africa appears to have one of the highest levels of alcohol consumption per drinker in the world. Up to a third of drinkers in this country drink at risky levels over weekends, and it is common for them to drink to intoxication (Peltzer & Ramlagan, 2009). Thirty to fifty percent of people, who drank in 2008, experienced at least one alcohol-related problem, such as missing work or having interpersonal problems (Schukit, 2009).

Disorders related to alcohol use are responsible for a large proportion of the health-care burden in many countries. Alcohol affects almost every organ in the body (Schukit, 2009). Alcohol-related traumatic injuries, as a result of violence and motor vehicle accidents are common in South Africa. The levels of Foetal Alcohol Syndrome are the highest ever recorded (Peltzer & Ramlagan, 2009). Studies show very strong links between drinking and the engagement in risky sexual behaviours, increasing the risk of HIV infections (Peltzer & Ramlagan, 2009). Risky alcohol use is a problem as it creates many negative consequences for both the drinker and the people near to him/her. There is a need for an effective method to help those who are risky drinkers to reduce their drinking.

The use of brief intervention can be very effective in helping the patients reduce or discontinue alcohol abuse (Rodseth, 2012). The brief intervention protocol includes four components, namely: ask about alcohol use, assess using the Alcohol Use Disorder Identification Test (AUDIT), advise using the brief intervention protocol, and assist. Intervention includes direct feedback about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (Saunders, Aasland, Amundsen & Grant, 1993).

Objectives

- To pre-test the use of alcohol with the aid of the Alcohol Use Disorder Identification Test;
- To implement the screening and brief intervention; and
- To implement a post-test to ascertain the use of alcohol 6 months after the intervention.

Data collection and analysis

A sample of 140 participants who consulted the Sibasa clinic was selected using the AUDIT questionnaire, and then randomly sampled to be either part of a control or experimental group. Each group consisted of 70 participants. After selection, the control group was provided with only an information leaflet on how to cut down alcohol. The experimental group was provided with individual counselling. Depending on their drinking behaviour, the counselling the experimental group received ranged from simple advice, alcohol education and brief counselling. Six months after the first AUDIT, both groups were reassessed to ascertain if there had been any change in drinking behaviour.

Main results

The baseline data was compared with the post test data using ANOVA and the results showed a significant reduction of the AUDIT score in both experimental ($t=15.47$; $P<0.001$) and control ($t=11.28$; $P<0.001$) groups. However, the intervention group had a higher reduction in alcohol consumption than the control group. Using ANOVA, showed that there was, overall, no significant intervention effect between experimental and control conditions at the 6 months follow-up.

Author's conclusions

Overall, brief intervention was effective in reducing the consumption of alcohol. There was improvement on the alcohol consumption of the control group. The sample was small, hence there is a need for future researchers to continue the research using bigger samples.

ACRONYMS

AUDIT	Alcohol Use Disorder Identification Test
BACs	Breath Alcohol Concentration
DALY	Disability Adjusted Life Years Lost
FBDG	Food-based Dietary Guidelines
HIV/AIDS	Human Immunodeficiency Virus/
MRC	Medical Research Council
NIAAA	National Institute on Alcohol Abuse and Alcoholism
PHC	Primary Health Care
RCT	Randomized Control Trial
SADHS	South African Demographic and Health Survey
SBI	Screening and Brief Intervention
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1. INTRODUCTION

The use of alcohol as well as the problems arising from its misuse is of widespread concern. The major impact of the misuse of alcohol is on the lives of both drinkers and the non-drinkers. These problems range from financial, legal and social problems to health problems that include the spread of sexually transmitted infections such as HIV/AIDS. The use of alcohol and other substances is also associated with the high rate of gender-based violence in South Africa (WHO, 2005).

Attempts to make people aware of the impact of alcohol misuse before complications develop owing to alcohol addiction have been made in various places. Awareness campaigns about alcohol use and misuse have been conducted to reduce the use of alcohol. However, the rate of alcohol misuse is still rising. There is a need for some form of intervention that will address the issue of alcohol use and misuse in the primary care setting where people can be reached before problems develop.

This study evaluated the effectiveness of screening and brief intervention to prevent alcohol misuse in the primary health care setting. The study used a randomized control trial or an experimental research design with patients who consulted primary health care centres for any ailments as research subjects. Participants included in the study were chosen through the use of random sampling. They were then divided into two groups, namely, the experimental group and the control group. Both groups were assessed before the intervention and after the intervention. The experimental group also received intervention before taking the second assessment. The results of both groups were compared and analysed using statistical package for social sciences (SPSS) as a way of evaluating the effectiveness of the brief intervention.

This chapter presents the following:

The background of the study, and the statement of the problem;

The aims and objectives of the study;

The significance of the study;

The proposed hypotheses;

Definitions of concepts;

Delimitations of the study;

Organization of the dissertation;

Conclusion.

1.2. PROBLEM STATEMENT

Alcohol consumption has been part of human history since time immemorial. There are numerous biblical examples and ancient myths that refer to alcohol. Local history and archaeological findings also suggest that consumption of alcohol has always been part of African culture, rituals, traditions and customs. However, the fact that people still continue drinking alcohol and pass down this habit through generations does not adequately explain why alcohol is consumed. Moreover, patterns of alcohol use have changed significantly over time and evidence suggests that the quantity consumed now is far greater than in earlier times (Gumede, 1995; Parry & Bennets, 1998). The World Health Organization (WHO) estimates that around two billion people world-wide consume alcohol (WHO, 2004). There is clearly no single reason why they do so or why different people drink to different extents. It is apparent that drinking is influenced by factors such as genetics, social environment, age, culture, gender, personality, accessibility and exposure (Parry & Bennets, 1998).

The consumption of alcohol is associated with many problems, not only for the person who drinks, but for other people who might be directly or indirectly affected by the drinking behaviour. Alcohol consumption is associated with many health-related problems and has been implicated in many violence-related injuries and deaths around the world.

In South Africa statistics have shown that alcohol has been associated with many diseases, injuries and high mortality rates. The mortuary statistics of 2002 given by the Medical Research Council (MRC) indicated that in Cape Town, Durban, Gauteng and Port Elizabeth, 45% of all non-natural deaths had Blood Alcohol Concentrations (BACs) greater than or equal to 0.05g/100ml; specifically Durban had 37%, Gauteng 40%, Cape Town 53% and Port Elizabeth 61%. Levels of alcohol were particularly high for transport-related deaths and homicides with 63% of transport-related deaths and 69% of homicides reported in Port Elizabeth, as having levels above the legal limit for driving (0.05g/100ml) (Plüddemann, Parry, Donson & Sukhai, 2004).

The MRC 2001 statistics from trauma units indicate that in Cape Town, Durban and Port Elizabeth, 39% of trauma patients had breath alcohol concentrations (BrACs) greater or equal to 0.05g/100ml; Durban had 22%, Gauteng 36%, and Port Elizabeth 57%). Levels of alcohol were particularly high with regard to transport and violence injuries with, for example, 73% of patients with violence-related injuries in Port Elizabeth and 46% patients with transport-related injuries in Cape Town having high alcohol levels above the legal limit for driving (Plüddemann, *et al.*, 2004).

The 2003 MRC statistic for the demand of specialist treatment services indicate that of 5886 people treated at 52 specialist substance abuse treatment centres in Cape Town, Durban, Mpumalanga and Port Elizabeth in the first half of the year, 52% reported having alcohol as their primary drug of abuse, with a further 13% having alcohol as their secondary drug of abuse (Myers & Parry, 2005).

Foetal Alcohol Syndrome (FAS) statistics of research conducted in Western Cape (Wellington) indicate that the prevalence of Foetal Alcohol Syndrome among Grade 1 learners was 46 per 1000 in 1997 and 75 per 1000 in 1999 (Croxford & Viljoen, 1999). Similar research conducted in Gauteng and De Aar in 2001 and in Upington in 2003 found FAS prevalence rates of 19, 103, 75 (estimates) per 1000 respectively.

A study conducted by the MRC in Atteridgeville in 2003 on alcohol and risky sex statistics among people aged between 25 and 44 found a significant positive association between various measures of alcohol use, previous month's use, frequency, problems and having multiple sexual partners or sexual relations that were regretted in the three months before the study (Morojele, Kachiengá, Nkoko, Moshia, Mokoko, Parry, Nkowane & Saxena, 2004). For example, the correlation between the quantity of alcohol consumed and the number of sexual partners (over a lifetime) was 0.436.

In 2000 a report by MRC on the statistics of alcohol and family violence, indicates that in Cape Town, Durban and Johannesburg between one-third and half of charged offences categorized as family violence, reported that perpetrators were under the influence of alcohol at the time of the alleged offence (Parry, Plüddemann, Louw & Leggett, 2004). Other reports indicate that academic failure and absenteeism were also significantly associated with alcohol consumption (Peltzer, Cherian & Cherian, 1999a).

This gives a picture of alcohol consumption in South Africa.

Many people are ignorant of the facts regarding the impact and effects of drinking alcohol; they do not know the dangers associated with drinking alcohol. The question arises: What needs to be done to reduce this problem?

This study sought to evaluate the effectiveness of Screening and Brief Intervention (SBI) in the primary care setting as an area where problems associated with the use of alcohol can be addressed.

1.3. AIMS AND OBJECTIVES OF THE STUDY

The main aim of the study was to evaluate the effectiveness of screening and brief intervention in the primary health care setting in reducing the use of alcohol.

Specifically, the following were the objectives of the study:

- To pre-test the use of alcohol using the Alcohol Use Disorder Identification Test;
- To implement screening and brief intervention;
- To post-test the use of alcohol six months after the intervention.

1.4. SIGNIFICANCE OF THE STUDY

It is the intention of this study to show the strength of screening and brief intervention for risky alcohol consumption.

The findings of this study are also useful for training of health care providers on how to screen and intervene for risky alcohol use.

1.5. HYPOTHESES

For this study, the following hypotheses were formulated:

a) If patients are screened for their alcohol use and subjected to an intervention strategy, they will change their drinking behaviour.

b) If patients are screened for their alcohol use and receive only an information leaflet on how to cut down on their drinking, they will not change their drinking behaviour.

1.6. DEFINITION OF CONCEPTS

Alcohol misuse: The over-use or incorrect use of beverages containing alcohol or ethanol

Evaluation: A strategy used to determine the worth or value of an intervention

Screening: A method used to assess the presence and the extent of the symptoms of a problem

Brief intervention: An action used for a limited time to assist in the elimination of the existing symptoms of a problem.

DELIMITATIONS

The study included only patients who presented themselves for treatment of any ailments in the clinics in the Sibasa local area in Vhembe District Municipality.

1.7. ORGANIZATION OF THE DISSERTATION

Chapter 1 provides an introduction to the study.

Chapter 2 presents a literature review about the nature of alcohol misuse.

Chapter 3 sets out the research methodology used to conduct the study.

Chapter 4 presents the findings of the study.

Chapter 5 presents a discussion of the findings of the study.

Chapter 6 summarizes the findings of the study, draws conclusions from the findings and presents recommendations based on the conclusions.

1.8. CONCLUSION

This chapter presented the background of the problem, the problem statement and the hypotheses regarding alcohol screening and brief intervention. It outlined the main aim, the objectives and the significance of the study. Significant concepts were defined and the study was delimited.

The chapter that follows reviews the literature on the nature of alcohol use.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, literature related to the study is reviewed. The chapter is divided into sub themes that include: alcohol use in South Africa, theoretical perspectives, categories of alcohol drinkers and the causes of alcohol use. It also reviews previous studies about the screening and intervention with regard to alcohol consumption.

2.2. PREVALENCE OF ALCOHOL USE IN SOUTH AFRICA

A report by the Medical Research Council in South Africa indicates that in 1997, just under half men (45%) and one-fifth of women (17%) 15 years and older in South Africa reported that they consumed alcohol. Rates of drinking differed substantially by population group and gender, with the highest levels of alcohol reported by white males (71%), followed by white females (51%), and Coloured males (45%). The lowest rates were reported by African and Asian females (12% and 9% respectively). For both men and women, higher rates of drinking were recorded in urban areas. For males the highest drinking levels (50% or more) were reported in the Free State and Gauteng and the lowest levels (28%). were reported in the Northern Province. For females, the lowest levels were also recorded in the Northern Province (9%), with the highest levels in the Free State, Western Cape and Northern Cape (23%-25%). For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year age groups (MRC, 1998; Flisher, Parry, Evans, Muller & Lombard, 2003).

These figures are likely to be inaccurate given the nature of broad household surveys, where respondents may be dishonest about behaviours that may be stigmatized or disapproved of in certain communities and where inadequate attention may be given to setting respondents at ease when they are asked sensitive questions (Gfroerer, Wright & Kopstein, 1997). Female drinking, in particular, is often disapproved of in many African communities and, as a result, is likely to be under-reported (Mphi, 1994; Siegfried, Parry, Morojele & Wason, 2001).

Pengpid, Peltzer and Van der Heever (2011) assessed the prevalence of alcohol use and associated factors among outpatients in an urban hospital in South Africa, and their study found that 41.2% of the men and 18.3% of the women were hazardous drinkers. In a sample of 1,532 selected patients, 3.6% of the men and 1.4% of the women met the criteria for probable alcohol dependence or harmful drinking. Globally, the prevalence of alcohol use is estimated to range from 4% to 29% for hazardous drinking and from less than 1% to 10% for harmful drinking (Reid, Feilin & O'Connor, 1999). Similar prevalence rates of hazardous or harmful alcohol use in health care settings have been reported from various African countries (Saunders, Aasland, Amusend & Grant, 1993; Chinyadza, Moyo, Katsumbe, Chisvo, Mahari, Cock & Mbengeranwa, 1993; Abiodun, 1996; Bekker & Van Vekden, 2003; Peltzer, 2006; Ward, Mertens, Flisher, Bresick, Sterling, Little & Weisner, 2008).

2.3. PREVALENCE OF ALCOHOL CONSUMPTION INTERNATIONALLY

Previous research in Australia found that 10% of people drank at levels considered to be harmful for long-term health, 7% at 'risky' levels, and 3% at 'high risk' levels. Twenty per cent of the people put themselves at risk of alcohol-related harm in the short term. Seventeen-and-a-half per cent of people had not consumed alcohol in the previous 12 months (Laslett, Room, Ferris, Wilkinson, Livingston & Mugavin, 2011).

In the USA the prevalence of alcohol use by adults over 18 years of age who were regular drinkers was found to be 50.9%. Among those who were infrequent drinkers and 18 years and above, the prevalence was 13.6% (National Health Interview Survey, 2012).

2.4. ALCOHOL USE GLOBALLY

According to the World Health Organization (2002), in 2000, the global burden of alcohol use in terms of death and disability was between 1.6% (for high-mortality developing countries) and 9.2% (for developed regions) of total Disability Adjusted Life Years lost (DALYs), accounting for 4.5 billion years lost. While South Africa is a high-mortality developing country, it has

recently been calculated that alcohol-related harm accounted for 7.1% of all deaths and 7.0% of Disability Adjusted Life Years Lost (DALYs) in 2000, resulting in 1.1 million life years lost in that year (Schneider, Norman, Parry, Plüddemann & Bradshaw, 2007). Alcohol was the third largest contributor to death and disability after unsafe sex/sexually transmitted infections and interpersonal violence. The three largest contributors to the burden specifically related to alcohol, included homicide and violence (40% of alcohol's burden), alcohol use disorder (15%) and road traffic injuries (15%).

It has been estimated that South African adult per capita alcohol consumption in 2005 was between 10.3 and 12.4 litres of pure alcohol. Of this consumption, 2.5 litres per person was homebrewed and illegally produced alcohol (Rehm, Room, Monteiro, Gmel, Graham, Rehn, Sempos, Frick & Jernigan, 2004). According to the World Health Organization (2002), 45% of men and 70% of women in Afro Region E (which includes countries like Ethiopia and South Africa) abstain from drinking alcohol. Therefore, while the consumption per adult is only 7.1 litres of pure alcohol in this region, consumption per adult is 16.7 litres per year (Rehm, Rehn, Room, Monterio, Gmel, Jernigan & Frick, 2003). It has been estimated that per capita consumption among drinkers in South Africa is likely to be even higher than the regional average (Parry, 2005). This gives South Africa one of the highest levels of alcohol consumption per drinker anywhere in the world, putting it at a similar level as countries such as the UK and the Ukraine (Rehm, *et al*., 2003).

Rehm, *et al*., (2003) indicate that the increased consumption of alcohol or heavy drinking is an important risk factor for many health problems and is thus a major contributor to the global burden of disease. According to the 2009 WHO report, the detrimental impact of alcohol was the third on the burden of disease and injury after unsafe sex and childhood underweight status. It exceeded that of many classic risk factors such as unsafe water and sanitation, hypertension, high cholesterol or the use of tobacco (WHO, 2009). Alcohol consumption has been identified as an important risk factor for illness, disability and mortality (Rehm, *et al*., 2004). In 1996, it was reported that in Australia excessive alcohol was responsible for 4.9% of the burden of disease.

Rehm, *et al*., (2003) has argued that alcohol consumption can be a direct cause or a partial cause of the following conditions and incidents:

- Cirrhosis of the liver;
- Infectious diseases;
- Diabetes;
- Pancreatitis;
- Unintentional and intentional injuries;
- Breast, oral, liver and colorectal cancers;
- Stroke, inflammatory heart disease and hypertension;
- Road traffic accidents;
- Memory lapse;
- Falling, suicide, and drowning.

2.5. ALCOHOL USE IN SOUTH AFRICA

The guidelines provided by the Food-based Dietary Guidelines (FBDGs) in South Africa include references to alcohol. The FBDG on alcohol intends to make a contribution towards encouraging those members of the South African population who misuse alcohol, particularly by binge drinking, to partake of low-risk drinking or sensible drinking. Low-risk drinking is defined (using Australian guidelines) as no more than four units of alcohol per day for men and no more than two units for women, with at least two alcohol-free days per week (Van Heerden & Parry, 2001).

South Africans consume well over 5 billion litres of alcoholic beverages per year. The figure could be nearer to 6 billion litres, depending on the estimate of the amount of sorghum beer consumed. Roughly two thirds of the total alcohol consumed in South Africa is malt or sorghum beer. In terms of alcoholic beverages this translates to roughly 4.2 billion litres or roughly 90%

of the alcoholic beverages consumed. Roughly 15% of the total alcohol consumed is wine (Myers & Parry, 2002).

Per capita consumption of alcohol in South Africa is between nine and ten litres per year, which places the country among the higher alcohol consuming nations. Since 1993 the level of per capita adult alcohol consumption appears to have been rising, after a decrease in 1990 and 1991 (Myers & Parry, 2002).

Based on the findings of the Department of Health's South African Demographic and Health Survey (SADHS) conducted in 1998 by the Medical Research Council (1998), just under half of men (45%) and one-fifth of women (17%), 15 years and older, reported that they consumed alcohol. For both sexes, the rate was 28%, which translates to 8.3 million South Africans who were 15 years or older. For both men and women, the highest levels of alcohol use were recorded among persons in the 35-44 and 45-54 year age groups, and the lowest levels in the 15-24 year group.

Risky drinking was defined as drinking five or more standard drinks per day for men and three or more drinks per day for women. While communal drinking is often also risky, respondents who reported communal drinking in the Medical Research Council (MRC) study were not classified as 'risky drinkers'. Rates of risky drinking for males and females were very similar and were roughly 4-5 times greater during weekends than on weekdays, with one-third of current drinkers drinking at risky levels over weekends. For both males and females, risky drinking at weekends appears to be highest among persons in the middle categories for ages 35-44 years for males and 45-54 years for females. Seven per cent of pregnant women acknowledged current drinking (MRC, 1998).

2.6. THEORETICAL PERSPECTIVES ON DRINKING PROBLEMS

There are many theories that can be used to explain behaviour related to alcohol consumption. Some of those theories are based on the psychological explanations of drinking behaviour while others are more medically based. For the purpose of this study, only three psychology based theories will be discussed in this section as the conceptualization of this study.

2.6.1. Social learning theory

The social learning theory is based on the idea that people behave the way they do largely because they have learned to behave in that way. According to the social learning theory, learning can take place on a number of levels with conditioning at one extreme and abstract thought and reflection at the other (Heather & Robertson, 1997). Classical conditioning as a way of learning happens this way: an unconditional stimulus produces an unconditioned response, and then a neutral stimulus is presented shortly before the unconditioned response. After this has happened several times, the neutral stimulus comes to have an effect similar to the unconditioned stimulus; it produces a similar response.

Conditioning plays an important part in behaviour (Heather & Robertson, 1997). Research shows that learning has a great effect on the development of harmful drinking behaviour. People learn how to drink, what to expect from drinking and to use drinking for certain purposes. People who have experienced rules about appropriate drinking learn those rules and rituals (although they may not always use what they have learned). Those who see mostly uncontrolled drinking with the intention of intoxication learn to drink that way (Heather & Robertson, 1997).

In instrumental learning, learning is strengthened each time a response is followed by satisfying consequences. Acts that are reinforced tend to be repeated. People are also shaped by the consequences of drinking. Human beings continue to behave in certain ways if they get positive consequences for the behaviour. If a person's social group drinks heavily and that person receives positive feedback from friends for drinking the same way, he or she will be more likely

to continue the pattern. If a person gets other rewards from drinking, for example, being more social or being less anxious he or she may also learn to use alcohol as a way of getting that reward and as a way of coping with uncomfortable and painful feelings. These positive consequences may be more emotionally powerful than negative ones like hangovers or family problems (Coon & Mitterer, 2012).

Modelling, as a way of learning, happens through observing the behaviour of others. In terms of alcohol consumption parents serve as models of behaviour for their offspring. Children imitate the patterns of behaviour set by their parents, whether it is abstinence, moderate drinking or heavy drinking (Herd, 1994; Windle, 2000). Parents are the agents by whom adolescents learn appropriate or inappropriate norms and values related to alcohol use (Herd, 1994). This theoretical construct has particular significance for explaining patterns of initiation into alcohol use, where the parent often serves as the first model of drinking behaviour. Often, an individual's first experience with alcohol occurs in the family setting, providing parents with the opportunity to moderate the child's interpretation of the meaning of alcohol use (Anderson, Bruijn, Angus, Gordon & Hastings, 2009). In addition, Tyler (2008) found that patterns of excessive alcohol use in parents influence children to a greater extent earlier in adolescence, before the influence of peers grows; first experiences with alcohol and initiation into its use are related to models of parental use acquired through social learning.

2.6.2. Psychosocial theories

All experts, including those who believe in the disease model, agree that psychological, social and environmental events are important elements in the development of problem drinking patterns (Heather & Robertson, 1997).

Habit is a learned element of drinking. People learn to use alcohol in certain situations, including developing the habit of drinking heavily. In the North, for example, people may learn the habit of drinking heavily each time they go to the bar, whereas they might not drink at all otherwise. Habit can be hard to change because it is a routine that people have developed without really thinking about it, a way of behaving that has become an automatic reaction. There is much

research that shows that if a person expects to be affected by alcohol in a certain way, she/he will in fact experience that effect (Heather & Robertson, 1997).

There have been experiments showing that even if people are drinking non-alcoholic drinks they can feel intoxicated (that is, they behave as if they are intoxicated and believe that they are intoxicated), if they believe that they are drinking alcohol. The behaviour that people expect alcohol to produce will consequently be the way they will behave. However, most people do not consciously realise that their beliefs influence their behaviour. Also, if people believe and expect that intoxication is a normal part of drinking, they may well drink to intoxication. If they believe they have no control over alcohol once they have a drink, they may well drink in an uncontrolled way. If people expect alcohol to lead to aggression, they may well act aggressively. Many studies show that alcohol-related violence is a learned behaviour, not a universal and automatic result of heavy drinking (Heather, 1995).

Alcohol may, however, make people less able to control anger and aggression. Cultures/societies develop attitudes, beliefs, expectations of effects and standards about alcohol use, as well as ways of discouraging unacceptable use (Graham, Leonard, Room, Wild, Pihl, Bois & Single, 1998). Penalties can be legal such as making drunk driving a criminal offence. They can also be less structured, but highly effective negative consequences like social shunning and gossip. The greatest problems seem to arise when a society tolerates heavy drinking and drunkenness rather than having strong clear rules about acceptable and unacceptable drinking behaviour and meaningful punishments (Parry, *et al*., 2004).

Subcultures are smaller groups within the main society, for example, teenagers, friendship groups, or church members. Subcultures can also develop their own attitudes, rules, and expectations about drinking. For example, heavy binge drinking is often seen as normal and acceptable by college students. However, people who belong to religious groups that have strict rules against alcohol do not accept drinking at all (Parry, *et al*., 2004).

Some people with certain personality characteristics and in certain environmental circumstances may be at greater risk of developing alcohol problems. For example:

• Certain mental disorders (e.g., anxiety, depression) may be more likely to lead to harmful alcohol use;

• People who have antisocial personalities (that is, they are aggressive, do not follow the rules of society, do not take responsibility for what they do, do not relate well to other people, etc.) are more likely to abuse alcohol;

• People whose social group drinks heavily may develop problems themselves;

• Highly stressful life events like isolation, violence and abuse may create a greater risk of alcohol abuse as a coping method.

Research also shows that "substance abuse frequently occurs within a social context characterized by social and economic disadvantage" (Parry, 2000). That is, people more often drink in problematic ways in situations of poverty and unemployment, low education level, unstable family conditions, unstable social environments, and lack of resources and supports. The connections between alcohol abuse and these other factors that affect health are complex. However, it is likely that when individuals do not have the tools to make a meaningful life, or feel a lack of secure rootedness in family and society, and/or do not have a sense of direction for a positive future, they may learn to use alcohol as a coping tool. This alcohol misuse then creates even more problems. To a great extent, then, alcohol misuse and problems arise out of personal psychological factors, learned social patterns, the rewards a person gets from drinking, and the person's expectations. Harmful and disadvantaged environmental, economic and social conditions increase the likelihood that people will develop problems (Parry, 2000; Kushner, Abrams & Borchadt, 2000; Jané-Llopis & Matytsina, 2006).

2.6.3. Harm Reduction Model

The harm reduction approach takes the holistic view that the essential goal of helping should be to decrease the "health and social problems associated with the use and control of alcohol and other drugs among all individuals, families and communities" (Marlatt, Larimer, Baer &

Quigley, 1993). It is a public health approach. Its goal is not necessarily to stop people from drinking, but to teach them how to drink without creating physical, legal, financial, or social problems for themselves and others. Harm reduction is not one particular strategy. It encompasses a variety of methods to help individuals control their drinking or their desire to drink. It includes counselling for other client issues either directly or through referrals to other care providers.

Abstinence is not a requirement in harm reduction methods, but it is always presented as an option. It is a fact that alcohol provides pleasure in many ways and most people either do not want to quit drinking completely, or they have mixed feelings. It is also a fact that some people simply should not drink at all, either temporarily (e.g., during illness, pregnancy, or if they are on medications, etc.) or permanently (e.g., those who have developed serious alcohol dependency). The harm reduction approach believes clients cannot be forced to do something they do not want to do, they have a right to choose what they want, and a reduction in problems is better than no change at all (Marlatt & Witkiewitz, 2002).

The counsellor does not take the position of being the authority telling clients what to do. Instead, the counsellor sets up a respectful and collaborative relationship that acknowledges clients' rights to participation, control, and ownership of their life decisions. Therefore, the counsellor helps clients determine what kind of change they want to accomplish (a specific cut-back level or abstinence) and then provides ideas and activities for reaching the goal. Clients' goals may change and their plans may change. There is much evidence that when people are allowed to make their own choices, quite a few in fact choose abstinence, sometimes immediately, sometimes later on. Furthermore, they will be more successful because they will be more committed to the goal. This is true in many areas of life. When people are ordered to do something, they may resist. Harm reduction methods are also extremely useful in treatment aftercare, and in helping clients manage drinking triggers and psychological habits (Marlatt, Blume & Parks, 2001).

Some people question the harm reduction approach. They believe that if alcohol abusers are told they can learn to control their drinking, it will lead to increased drinking and eventually the development of dependence. However, all the evidence shows just the opposite. Harm reduction can be highly successful in helping those with alcohol abuse disorders to reduce their drinking to levels that create no problems or at least fewer problems (Marlatt, *et al*., 1993; National Institute for Alcohol Abuse and Alcoholism, 2000). It has also been shown to be a useful middle step in helping alcohol dependent people become abstinent. People trying to change heavy drinking patterns or achieve abstinence are not often immediately successful. It can take time and several attempts. Harm reduction provides a less stressful, less guilt-producing path to change while reducing community, family, and individual physical and mental harm. Harm reduction has been shown to be a powerful tool for change, but it must be presented appropriately (Marlatt & Witkiewitz, 2002).

It is not enough merely to tell people to cut down on their drinking or to stay away from alcohol. Alcohol misuse is not an isolated behaviour. Effective harm reduction counselling is a holistic process that helps people look at their whole lives and the role alcohol plays (Marlatt, Blume & Parks, 2001). Areas to be considered include the following:

- Assessing drinking levels and the possible future consequences of the risky drinking;
- Assessing readiness to change;
- Looking at underlying factors in harmful drinking (e.g., drinking cues or triggers, self-esteem, family problems, past trauma, etc.);
- Analysing the benefits and problems of current drinking;
- Setting goals;
- Preparing for possible positive and negative consequences of change;
- Monitoring/managing drinking behaviour and/or the desire to drink;
- Learning new ways of handling problems, dealing with emotions, relating to others, finding peace, getting what one wants, etc.

A longer period of such outpatient treatment (e.g. 10 to 12 sessions) may be necessary for those with serious alcohol and/or personal problems.

2.6.4. Motivational interview

Why does one session of basic advice work with some people and intensive treatment (even with aftercare) not work with others? Alcohol misuse is resistant to change. Evidence suggests that a person's readiness to change is a major factor in success. No change is possible unless the person acknowledges a problem and wants to do something about it. As in other areas of life, people change only when they have decided there is a need to change. Experts agree that empathic (understanding) motivational interviewing is an effective treatment tool that helps clients come to their own realization of negative consequences and the need for change (Baer, Roserngren, Dunn, Wells, Olge & Hartzler, 2003).

One model increasingly used by many alcohol treatment programmes is the Stages of Change model. This model was originally developed more than 20 years ago to help people stop smoking, but has been found to be an effective tool in many kinds of change. This approach looks at behaviour change as a process that depends on the person's thinking about alcohol use and problems.

Five steps of change according to Prochaska's motivational interview

• Pre-contemplation

During this stage, the person might have some awareness and concern about his/her excessive/inappropriate drinking, but does not really acknowledge that there is a problem. For example, bosses or family may have said something or the person may have been involved in a fight while drunk, etc. She/he may think about changing sometime, but not in any definite way. Counsellors at this stage gently help the client to come to the conclusion that perhaps there is a reason to change (Prochaska, DiClemente & Norcross, 1992).

• Contemplation

The person decides to do something about his/her drinking, although there are probably mixed feelings. The person may be determined that she/he will change, but not yet. At this point, the person will be more willing to discuss the pros and cons and options. Counselling focuses on helping this person to see the negative consequences of drinking alcohol that are already there in his/her life (Prochaska, *et al.*, 1992).

• Preparation

The person makes an active decision and commitment to change. The counsellor helps the client gather information, assesses options and considers positive and negative consequences of each option. This is an important stage because this is the beginning of a plan. The plan must be based on sufficient information and on the client's needs.

• Action

At this stage the person is fully committed and begins the plan to cut down alcohol consumption or stop drinking. The person uses strategies that will lead to the achievement of the goals set.

• Maintenance

The person is following the plan and uses strategies to stay on track. The person practises the new strategies to help him/her to stay on track.

• Relapse

As new habits do not come easily, most people will probably fall back into earlier patterns at least occasionally. It is important to help them understand that they may get off track, but they can plan how to get back on track. Relapses are excellent learning situations for examining what led this to happen and what can be done the next time to prevent it from happening again. People

may go back and forth between stages several times before a change is complete. They should simply be helped to work through the issues and move on again (Prochaska, *et al.*, 1992).

Principles of motivational interview

Miller and Rollnick (2002) describe four main principles that are essential in motivational interviewing as follows:

• Expressing empathy:

A counsellor must express empathy as it helps build a trusting relationship (respect, acceptance of what the client says and how she/he sees things, understanding of feelings and circumstances, encouragement of expression of thoughts and feelings, without counsellor judgment).

• Developing discrepancy:

The counsellor helps clients who believe they do not have a problem to see that the belief does not fit with the facts of their lives. For example, the client may say that alcohol is not a problem or that he has a job, his girlfriend does not mind his drinking, etc. At the same time he might also mention that he is off work for a couple of days a week because of hangovers and that he and his girlfriend have been arguing a lot. This contradicts the first statements, but at this point the counsellor would ask some non-confrontational questions related to those events, which encourages the client to think about the situations and the possible role of alcohol. However, the client needs to make the connections her/himself, not the counsellor.

• Rolling with resistance:

If the client denies problems even though they may be obvious, or resists reviewing her/his behaviour, the counsellor should not argue. Instead, the counsellor should eventually, gently turn that resistance back in a way that gets the client thinking again. For example, “OK, I know what you’re saying. But there’s something you mentioned last time that I don’t understand. . . . Can you tell me more about . . . ?”

• Supporting self-efficacy: The counsellor should always make it clear that clients have the ability to make the changes they want, have control over their lives and have personal strengths and resources that make them capable. The counsellor believes in the client and the client learns to believe in him/herself.

Once clients themselves have decided that they may need to do something about their problem, the counsellor and client can move to the next stage which is making a plan. Motivational interviewing is an important part of all helping strategies, from brief counselling to residential treatment (Fleming, Barry, Manwell, Johnson & London, 1997).

2.6.5. Health belief model

The Heath Belief Model (HBM) is commonly used in health education and health promotion (Glanz, Rimer & Lewis, 2002). It was developed in the 1950s in an effort to explain why screening programmes offered by the U.S Public health Service, especially for tuberculosis, were not very successful (Hochbaum, 1958). The model propositions that health-seeking behaviour is influenced by a person's perception of a threat posed by a health problem and the value associated with actions aimed at decreasing the risk (Hochbaum, 1958). Personal perception is influenced by a wide range of interpersonal factors affecting behaviour.

The Health Belief Model has four main hypotheses, namely perceived seriousness, perceived susceptibility, perceived benefits and perceived barriers (Glanz, Rimer & Lewis, 2002). Each of these hypotheses may be used on its own or combined with others to explain behaviour. The model was further modified to include cues to action, motivating factors and self-efficacy.

Perceived seriousness explains how an individual either changes or maintains a detrimental behaviour based on how serious they believe the consequences of maintaining the behaviour are.

This perception is either based on medical information or personal beliefs about the consequences of the behaviour if it is not changed.

The greater the perceived risk, the greater the likelihood of engaging in risk-reducing behaviour; this is termed perceived susceptibility. If individuals recognize that their behaviour when they are under the influence of alcohol makes them vulnerable to many health hazards, they would try to engage in risk-reducing behaviour. However, if an individual does not believe that their behaviour is risky, the chances are that the individual will continue indulging in risky behaviour. When perceived seriousness is combined with perceived susceptibility, good health behaviour is promoted (Glanz, Rimer & Lewis, 2002).

The next hypothesis is perceived benefits. This is a personal opinion of the value of a new behaviour in decreasing the risk of contracting a disease. New health behaviour might be adopted if, by doing so, one perceives that it will reduce one's risk of developing a disease. If an individual perceives that reducing the amount of alcohol they take, avoiding certain places which may trigger alcohol consumption or even deciding to stop drinking altogether will reduce his/her risk of experiencing problems arising from his/her drinking behaviour; the chances are that he/she will change their behaviour (Glanz, Rimer & Lewis, 2002).

Perceived barriers are an individual's appraisal of the stumbling blocks that are in the way of adopting new health behaviour. For instance, a female student who lives in a university residence where other students perpetually host parties may perceive that as a barrier to her changing her drinking habits. To adopt healthy behaviour, one has to believe that the benefits outweigh the consequences of continuing with the old risky behaviour (Centre for Disease Control and Prevention, 2004).

Modifying variables, such as culture, education level, skill, motivation and previous experiences, were added to the four hypotheses. These are the characteristics of an individual that influence personal views. Previous experiences increase the perception of vulnerability as one would be

aware of exposure to risk. They may also reduce one's perception of the seriousness of the behaviour because the consequences were dealt with easily (Glanz, Rimer & Lewis, 2002).

Cues to action are events, people or things which motivate people to act or change behaviour. These include a reminder by a family member, mass media campaigns (Graham, 2002) and advice from others (Ali, 2002). Specifically, significant others who constantly remind individuals about their behaviour or reproach the use of alcohol, or posters warning the public of the dangers of alcohol abuse serve as cues to action.

Self-efficacy occurs when one believes that one is able to accomplish something (Bandura, 1977). Bandura proposes that, generally, individuals do not engage in a new experience unless they believe that they can go through with it. An individual may believe that changing his or her behaviour will be beneficial. However, if their perception of potential barriers is greater than that of perceived benefits, they will probably not adopt new behaviour.

2.7. CONCEPTUALIZATION OF ALCOHOL CONSUMPTION

Drink	Volume	% of alcohol in a drink	Units of alcohol
Can of lager or cider	340 ml	5%	1 unit
Glass of wine	120 ml	12%	1 unit
A single tot of spirits(whisky, gin or vodka	25 ml	43%	1 unit
A small glass of liqueur or aperitif	25 ml	30 %	1 unit
Cartoon of ordinary commercial sorghum beer	500ml	3%	1 unit

Table 2.1: Description of alcoholic beverages

2.7.1. Categories of alcohol drinkers

According to WHO (2000) there are different categories of alcohol drinkers ranging from those who drink safely and sensibly to those who are dependent on alcohol. These categories depend on the quantity of alcohol consumed and the frequency of drinking. These categories will be discussed below.

2.7.1.1. Safe and sensible drinking

Sensible drinking is defined by WHO (2000) as the consumption of alcohol, while still remaining\ in control of one's own body, mind and behaviour. People who fall under this category drink only a limited amount of alcohol and do not drink every day. Sensible drinking for men is four units of alcohol per occasion, and three units for women on one occasion as per the table above. It is advisable not to drink at all in the following situations:

- When pregnant or breast feeding;
- When very tired;
- When food has not been consumed for several hours;
- When driving and operating machinery;
- When taking medicine;
- If one is not in control of one's drinking.

2.7.1.2. Low risk drinking

The social drinker consumes alcohol in amounts and circumstances that appear socially acceptable. However, this person may develop a serious alcohol problem if there is an inclination to over-indulge or occasionally to use alcohol to cope with stress (Edwards, Marshall & Cook, 1997).

2.7.1.3. Harmful drinking

Harmful drinking is drinking alcohol that results in adverse effects; for example, physical or psychological harm. Harmful drinkers consume alcohol above the recommended daily, weekly, or per-occasion amounts; that is, more than three standard drinks for men and more than two standard drinks for women and all above 65 years of age.

The harmful drinker drinks in socially appropriate circumstances, but actively seeks an occasion for drinking in a social situation. He or she has more than two drinks every day, continuously seeks out situations in which to drink, and may often over-consume but not exceed the alcohol consumed by her/his peers. He or she may never appear drunk or seem to be affected in social or work routines, but as drinking escalates, it becomes increasingly linked to seeking physical or psychological relief. Problem drinkers emerge from this population. Neither the person nor his/her acquaintances suspect an alcohol abuse problem (Edwards, *et al.*, 1997).

2.7.1.4. Hazardous drinking

Harmful drinking is the consumption of alcohol that places a person at risk for adverse health effects. Alcohol consumption is associated with social consequences such as problems with family, fighting and financial problems. Most people who experience alcohol-related problems have mild to moderate problems. These people are unlikely to meet diagnostic criteria for severe alcohol dependence or alcoholism, despite their frequent drinking and occasional negative consequences from drinking. The majority of these groups are more appropriately classified as problem drinkers (Burge & Schneider, 1999).

The problem drinker gets drunk on occasion and also exhibits medical, legal, social or psychological consequences of excessive alcohol consumption; and makes or thinks of making attempts at cutting down or quitting. Functioning may vary from seemingly intact behaviour to difficulty in coping. The drinker may deny a drinking problem and attribute blame to external events or persons. Denial is common even among those with multiple arrests for drunken driving (Edwards, *et al.*, 1997).

2.7.1.5. Alcohol dependence

The alcohol-dependent drinker tries to consume the same excessive amount of alcohol regardless of mood situation, although external circumstances might constrain drinking for a time. Most continue to work, some even in high positions. Alcohol is given top priority in all situations; for example, one goes to a party to drink, not to socialize. Tolerance to alcohol develops, and withdrawal symptoms may be noted during the workday when the blood alcohol level drops. Drinking at lunch and during the cocktail hour is needed to relieve symptoms. The patient is aware of the compulsion to drink but is difficult to reach unless family or the employer notes that there is a problem or serious medical complications develop (Edwards, *et al.*, 1997).

2.7.1.6. Severely alcohol dependency

This is a severely deteriorated drinker who maintains a constant state of intoxication; has no care for his or her person or surroundings; undergoes periodic hospitalization for detoxification and for medical care necessary after alcohol-related trauma or organ damage (Edwards, *et al*., 1997).

2.7.2. The role of alcohol in South African history

During pre-colonial days, the consumption of alcohol was preserved for elders, and other senior or authority figures, including health practitioners and healers. Solitary drinking was not tolerated. Drinking did not occur every day but only on special occasions such as religious feasts, funerals and marriage ceremonies. Drinking was less common among youth and women of childbearing age. These were only allowed to drink only when engaging in rituals and religious ceremonies (Gumede, 1995). Traditionally in South Africa, alcohol served many purposes. It was used as a means of payment, and for strengthening friendships, and was associated with manhood and the strengthening of the body (Setlalentoa, Pisa, Thekisho, Ryke & Loots, 2010).

Since then alcohol has been prominent in South Africa, both socially and politically. Women used to cultivate maize and sorghum to produce food and ferment beer. Traditional African beer played an important role in the lives of black people of South Africa, both culturally and religiously. People would drink alcohol when traditional ceremonies and feasts were held

(Gumede, 1995). According to Gumede (1995), two feasts recorded in the history of black people are the feast of the first fruits (Umkhosi Wokweshwana) which took place after the first harvest, and the festival of the Queen of the Rainbow (Umkhosika Nonkhubulwana) involved the consumption of low alcohol content beer. These feasts were celebrated by women after the first rainfall.

Gumede (1995) argues that the British colonial government prohibited drinking among non-white population groups as it believed that alcohol caused social decay and disorder among blacks. With the arrival of European liquor called “Cape Smoke”, Africans began to move away from traditional African beer to liquor. This was seen as unacceptable by European farmers because they believed alcohol made Africans disobedient. The disobedience was displayed when workers were under the influence of liquor. They no longer took orders, would not come to work, and would even talk back to their employers. This led to many laws being passed to control drinking by Africans.

Among white South Africans, malt, beer and wine were popular drinks, particularly during mealtimes and social functions such as weddings, communion at church (wine) and sporting events. To black South Africans, among many, alcohol is still a symbol of personal and economic freedom (Gumede, 1995).

During modern times, drinking is widespread among different members of the community. With the laws/controls that regulated production, and the sale and access to alcohol by Africans led to the eruption of illegal liquor outlets, such as shebeens. These are private homes where alcohol is brewed, sold and consumed. The informal/illegal liquor sector in South Africa is not regulated and operates outside the law. It comprises hundreds of small home brewers of sorghum beer. The informal liquor sector also consists of as many as 200 000 liquor outlets, largely shebeens. In South Africa, the alcohol industry is a major source of employment and government revenue (Gumede, 1995; Parry & Bennets, 1998; Setlalentoa, *et al*., 2010).

2.8. CAUSES OF DRINKING PROBLEMS

Drinking behaviour, and the problems with which it is associated, are determined by multiple, interacting factors that concern both an individual and his or her environment. Those factors will be discussed in the following section.

Research shows that many adolescents start to drink at very young ages. In 2003, the average age of first use of alcohol was about fourteen, compared to about seventeen-and-a half in 1965 (Newes-Adeyi, Chen, Williams & Faden, 2005; SAMHSA, 2003). People who reported starting to drink before the age of 15 were also four times more likely to report meeting the criteria for alcohol dependence at some point in their lives (Grant & Dawson, 2003). In fact, new research shows that the serious drinking problems (including what is called alcoholism) typically associated with middle age, actually begin to appear much earlier, during young adulthood and even during adolescence.

As children move from adolescence to young adulthood, they encounter dramatic physical, emotional, and lifestyle changes. Developmental transitions, such as puberty and increasing independence, have been associated with alcohol use. So in a sense, just being an adolescent may be a key risk factor not only for starting to drink, but also for drinking dangerously (Newes-Adeyi, *et al.*, 2005).

2.8.1. Risk-Taking

Research shows that the brain keeps developing well into the twenties, during which time it continues to establish important communication connections and further refines its function. Scientists believe that this lengthy developmental period may help explain some of the behaviour which is characteristic of adolescence; for example, their tendency to seek out new and potentially dangerous situations. For some teens, thrill-seeking might include experimenting with alcohol. Developmental changes also offer a possible physiological explanation for why teens act so impulsively, often not recognising that their actions, such as drinking, have consequences (Grant & Dawson, 1998).

2.8.2. Expectancies

How people view alcohol and its effects also influences their drinking behaviour, including whether they begin to drink and how much they drink. An adolescent who expects drinking to be a pleasurable experience is more likely to drink than one who does not. An important area of alcohol research is focusing on how expectancy influences drinking patterns from childhood through adolescence and into young adulthood (Lang & Strizke, 1993; Smith, Goldman, Greenbaum & Christiansen, 1995; Zucker, Kincaid, Fitzgerald & Bingham, 1995; Dunn & Goldman, 1996). Beliefs about alcohol are established very early in life, even before the child begins elementary school (Noll, Zucker & Greenberg, 1990). Before age 9, children generally view alcohol negatively and see drinking as bad, with adverse effects. By about age 13, however, their expectancies shift, becoming more positive (Dunn & Goldman, 1996; Dunn & Goldman, 1998). As would be expected, adolescents who drink the most, also place the greatest emphasis on the positive and arousing effects of alcohol.

2.8.3. Sensitivity and tolerance to alcohol

Differences between the adult brain and the brain of the maturing adolescent may also help to explain why many young drinkers are able to consume much larger amounts of alcohol than adults (Johnston, O'Malley & Bachman, 2003) before experiencing the negative consequences of drinking, such as drowsiness, lack of coordination, and withdrawal/hangover effects (Spear, 2000; Spear & Varlinskaya, 2005). This unusual tolerance may help to explain the high rates of binge drinking among young adults. At the same time, adolescents appear to be particularly sensitive to the positive effects of drinking, such as feeling more at ease in social situations. Young people may drink more than adults because of these positive social experiences (Spear, 2000; Spear & Varlinskaya, 2005).

2.8.4. Personality characteristics and psychiatric comorbidity

Children who begin to drink at a very early age (before age 12) often share similar personality characteristics that may make them more likely to start drinking. Young people who are disruptive, hyperactive and aggressive are often referred to as having conduct problems or being

antisocial. Those who are depressed, withdrawn, or anxious may be at the greatest risk of developing alcohol problems (Zucker, Wong, Puttler & Fitzgerald, 2003). Other behaviour problems associated with alcohol use include rebelliousness (Brook, Whiteman, Finch & Cohen, 1995), difficulty avoiding harm or harmful situations (Jones & Heaven, 1998), and a host of other traits seen in young people who act without regard for rules or the feelings of others. This is known as dis-inhibition (Moss & Kirisci, 1995; Colder & Chassin, 1997; Colder & O'Connor, 2002).

2.8.5. Hereditary factors

A strong family history of alcohol-related disorders indicates a vulnerability to alcohol-use disorder. About 40-60 % of the risk is explained by genetic factors and the remainder is a combination of genetic factors and the environment (Rodseth, 2012). Some of the behavioural and physiological factors that converge to increase or decrease a person's risk of developing alcohol problems, including tolerance to alcohol's effects, may be directly linked to genetics. For example, being a child of an alcoholic or having several alcoholic family members places a person at greater risk of developing alcohol problems. Children of alcoholics (COAs) are between four and ten times more likely to become alcoholics themselves than are children who have no close relatives with alcoholism (Russell, 1990). COAs also are more likely to begin drinking at a young age (Donovan, 2004) and to progress to developing drinking problems more quickly (Grant & Dawson, 1998).

Research shows that COAs may have subtle brain differences, which could be markers for developing later alcohol problems (Tapert & Schweinsburg, 2005). Using high-tech brain-imaging techniques, scientists have found that COAs have a distinctive feature in one brainwave pattern (called a P300 response) that could be a marker for later alcoholism risk (Hill & Steinhauer, 1993).

Some studies suggest that these brain differences may be particularly evident in people who also have certain behavioural traits, such as signs of conduct disorder, antisocial personality disorder,

sensation-seeking, or poor impulse control (Tarter, Altermen & Edwards, 1985; Schuckit & Smith, 1997; Schuckit, 1998; Bauer & Hesselbrock, 1999a; Bauer & Hesselbrock, 1999b). Studying how the brain's structure and function translates to behaviour will help researchers to better understand how pre-drinking risk factors shape later alcohol use; for example, does a person who is depressed drink to alleviate his or her depression, or does drinking lead to changes in his brain that result in feelings of depression?

Studies have confirmed that there is a genetic component to a drinking behaviour and drinking problems, in addition to the undeniably important influences of the environment (Brook, *et al.*, 1995; Parry & Bennets, 1998; Botvin & Kantor, 2000). Behaviour such as alcohol consumption cannot be totally understood on the basis of genes or environment alone. Instead, it must be seen as the product of the interaction between a variety of genetic and environmental influences. The individual is more or less predisposed to heavy drinking, or to a particular alcohol-related problem or to become depend upon alcohol. This level of predisposition determines the risk or the probability of being a heavy drinker or of suffering from a particular drinking related problem (Edwards, *et al*., 1997; Parry, *et al*., 2004).

2.8.6. Environmental Aspects

Drinking behaviour reflects a complex interplay between inherited and environmental factors. The implications of environmental factors in causing alcohol drinking are only beginning to be explored in adolescence (Rose, Dick, Vicken & Kaprio, 2001). What influences drinking at one age may not have the same impact at another. As Rose, Dick, Viken & Kaprio (2001) show, genetic factors appear to have more influence on adolescent drinking behaviour in late adolescence than in mid-adolescence.

Environmental factors, such as the influence of parents and peers, also play a role in alcohol use (Halpern-Felsher & Biehl, 2004). For example, parents who drink more and who view drinking favourably may have children who drink more, and an adolescent girl with an older or adult boyfriend is more likely to use alcohol and other drugs and to engage in delinquent behaviour.

Researchers have examined other environmental influences as well, such as the impact of the media (Saffer, 1996; Parry, 2002). Today, alcohol is widely available and aggressively promoted through television, radio, billboards, and the Internet. Researchers have studied how young people react to these advertisements (Tibbs & Parry, 1994; Parry, 2002). In a study of learners in Grades 3, 6 and 9, those who found alcohol advertisements desirable were more likely to view drinking positively and to want to purchase products with alcohol logos (Austin & Knaus, 2000). Research results are inconclusive, however, on whether these positive views of alcohol actually lead to underage drinking.

2.8.7. Political and economic factors

Some political and economic circumstances, like reducing the real price of alcohol, tend to increase the overall consumption of alcohol by the population (Parry, 2005). Similarly, measures which make alcohol more readily available by reducing restrictions on its supply also tend to increase consumption. Thus, major influences upon per capita consumption in a population include factors amenable to political manipulation, such as taxation, licensing laws and trade agreements. Manipulation of such influences can have an enormous impact on the level of alcohol consumption of a population. Conversely, failure to utilize such controls can allow alcohol consumption to escalate and related problems to reach epidemic proportions (Edwards, *et al*., 1997; Parry, 2005).

2.8.8. Socio-cultural factors

The availability of alcohol, affordability of alcohol and acceptability of alcohol plays an important role in causing drinking problems. These factors are determined to a large degree by social and cultural values. However, these influences operate at various levels; for example, national and racial, religious, occupational and family influences may all play a part. Some cultures and societies, for example Islamic culture, promote total abstinence. At the other extreme are permissive culture;, for example Mediterranean countries, where drinking is actively endorsed. Such countries usually have high rates of morbidity attributable to alcoholic liver diseases (Edwards, *et al*., 1997; Parry & Bennets, 1998).

Between these extremes there may be a mixture of cultural influences encouraging or discouraging drinking; for example, in Jewish societies drinking is generally socially accepted, but strong negative connotations are attached to deviant drinking behaviour such as public drunkenness.

Culture can influence the pattern and context as well as the amount of alcohol consumption. Patterns of alcohol consumption may, in turn, be important determinants of a drinking problem. In France, habitual drinking of wine with meals is associated with a relatively high, but constant per capita consumption, which predisposes one towards chronic medical complications such cirrhosis and certain cancers (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2006).

Culture may also influence the way in which people behave when intoxicated. Family culture may also be an important influence on drinking. In addition to genetic influences, it seems likely that children will inherit heavy drinking patterns by virtue of learning this behaviour and any associated values and beliefs from their parents. However, this does not necessarily mean that all heavy-drinking parents produce heavy-drinking children (Edwards, *et al*., 1997).

2.8.9. Stress and life events

Major life events and everyday hassles both appear to increase the amounts that people drink. This may be explained on the basis that alcohol relieves anxiety and is thus used as a means of coping with stress. An increased frequency of life events usually precedes the onset of alcohol misuse (Sayette, 1999; Arch, Craske, Stein, Sherbourne & Roy-Byrne, 2006). However, evidence from research conducted is not consistent and heavy drinking tends to cause further stress in the form of the problems such as divorce, unemployment and ill health. There is also evidence that alcohol can exacerbate anxiety rather than relieve it (Edwards, *et al*., 1997; Arch, *et al*., 2006; Jané-Llopis & Matsytsina, 2006).

Depression and anxiety is consistently predicted among pregnant women who continue to use alcohol antenatally (Homish, Cornelius, Richardson & Day, 2004). Depression is argued by some as a justification for both initiating and maintaining alcohol and substance use in pregnancy. In women with alcohol and/or substance use disorders, perceived stress is associated with increased use and increased risk of relapse. In South Africa pregnant women tend to have high levels of perceived stress and pose a significant and public health problem (Vythilingum, Roos, Faure, Geerts & Stein, 2013).

2.8.10. Contextual drinking problems

Drinking is a perfect example of a contextual problem. Relatively modest alcohol consumption, which would cause no social, psychological or medical problems in most other contexts, may be the cause of serious injury or death when the drinker is also the driver of a car. Similar considerations also apply to other forms of transportation and safety-sensitive environments (Edwards, *et al*., 1997).

2.9. FACTORS THAT INFLUENCE ALCOHOL CONSUMPTION

Several factors contribute to an individual's decision to drink or not to drink alcohol on any given occasion. These factors are discussed below.

The individual is usually influenced to drink alcohol by the immediate environment, such as the nature of the occasion, the individual's special desire, physical and mental state and also the degree of peer pressure. In addition, socio-cultural influences and historical and contemporary factors contribute to an individual's attitudes, beliefs and values regarding the use of alcohol. These may include religious, ethnic and family customs (Fishman, 1992; Parry & Bennets, 1998).

However, compared with the circumstances of the immediate situation, socio-cultural influences have less effect on an individual's decision to drink. In many cases, persons with particular

beliefs and expectations about drinking come into contact with people who have different attitudes to alcohol use. Thus, an individual may be placed in a situation that demands social drinking at a level that he or she would previously have considered to be alcohol misuse (Fishman, 1992).

Factors in alcohol misuse are likely to include: peer pressure (particularly among young persons) and communal drinking among adults; availability, particularly in more disadvantaged communities; the falling price of certain kinds of alcohol products (e.g. malt beer and brandy) relative to the consumer price index; chemical dependence on alcohol; poor social conditions and boredom; a lack of social controls to deal with those misusing substances; and societal attitudes in general (Rocha-Silva, Miranda & Erasmus, 1996; Parry & Bennetts, 1998).

Ghuman, Meyer-Weitz and Knight, (2012) found in their study that 54 % of students had used alcohol before, 14,5% had had their first drink before the age of 13, and 32% engaged in binge drinking. Students, who were more likely to have used alcohol, were older, male, white and had often seen their fathers drunk, had friends who frequently drank alcohol. With regard to availability and access, for example, there are currently almost 23 000 licensed liquor outlets with an estimated 150 000 to 200 000 unlicensed outlets, yielding approximately one liquor outlet for every 190 persons in South Africa (Parry & Bennetts, 1998). Research has shown that school-going youth find it easy to purchase alcohol from bottle stores, supermarkets, bars and shebeens (Tibbs, Parry, Stretch & Brice, 1994).

2.10. CONSEQUENCES OF ALCOHOL CONSUMPTION

According to the Constitution of the WHO, health is "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity". This definition, therefore, takes into account not just physical and mental harms, but also social harms, both for the drinker and for others.

Alcohol affects virtually every organ system in the body (Schukit, 2009). A few examples of harm to others are included in the analysis of alcohol's contribution to the global burden of disease. These include perinatal conditions attributable to the mother's drinking during pregnancy, and injuries, particularly assault injuries. However, the scope of alcohol-related social harm and of harm to others stretches well beyond these items. Thus, a recent study in Australia (Laslett, *et al*., 2011) identified the following harms to others associated with drinking:

- Harms identified in records—these included deaths and hospitalizations (e.g., attributed to traffic injuries because of driving under the influence), child abuse or negligence cases involving a caregiver's drinking, and domestic and other assaults;
- Harms based on survey reports — these included negative effects on co-workers, household members, other relatives and friends, strangers, and on the community as a whole.

These effects were quite prevalent. Thus, the researchers estimated that within one year, more than 350 deaths were attributed to drinking by others, and more than 10 million Australians (or 70% of all adults) were negatively affected by a stranger's drinking (Laslett, *et al*., 2011).

2.10.1. Health impacts of alcohol

In 2000, alcohol was responsible for 4% of the global burden of disease, which is more or less equal to the damage caused to society by tobacco use (4.1%). Alcohol was estimated to have caused 1.8 million deaths or 3.2% of all deaths globally. Contribution to the global burden of disease was considerably higher in developed countries (9.2%) than in developing countries, partly owing to the greater consumption of alcohol in these countries and partly owing to the high burden from other diseases in developing countries (such as AIDS, Malaria, childhood illnesses, etc.). Alcohol consumption contributes to disease, injury, disability and premature death more than any other risk factor in developing countries with low mortality rates. In high mortality regions including Afro Region E, the GBD was calculated to be 1.6%. For South Africa the estimated burden owing to alcohol (death and disability) has been calculated to be 7.0%, 10.5% for males and 3.1% for females (Schneider, *et al*., 2007)

2.10.2. Direct biological Impacts

Schneider, *et al*., (2007) argue that both acute intoxication and chronic long-term excessive drinking may have adverse effects on the brain, central nervous and muscular system, liver, heart (though there are also some positive effects for certain groups of people), blood cells, gastrointestinal system, respiratory system, reproductive system, as well as the immune system. Alcohol use contributes to more than 60 diseases and conditions. The conditions mentioned below are some of the most important (the prevalence rates of most of these diseases in South Africa are generally not known and, unless specifically stated, rates refer to international figures).

2.10.3. Alcoholic liver disease

Alcohol is absorbed quickly into the blood system, passes through organs where it oxidizes slowly and can cause damage. The most common organ affected is the liver. Mortality studies have consistently demonstrated that heavy drinkers die from liver disease at a much higher rate than the general population. Types of alcoholic liver disease include alcoholic fatty liver (prevalent in about 20% of heavy drinkers); alcoholic hepatitis; and alcohol cirrhosis (about 10-15% of people with alcohol dependence develop cirrhosis). Alcohol also increases the risk of developing liver cancer (Schneider, *et al*., 2007; Reuben, 2007).

Alcohol hepatitis is characterized by the inflammation (necrosis) of the liver, jaundice and abdominal pain. Scar tissue may replace healthy tissue, leading to a process of “fibrosis”. The condition is reversible with abstinence. Alcohol cirrhosis is the most advanced form of liver disease. The liver is characterized by extensive fibrosis that stiffens blood vessels and distorts the internal structure of the liver. This damage results in severe functional impairment and may result in secondary malfunction of other organs, including the brain and kidneys. The amount of alcohol consumed and the duration of that consumption are closely associated with cirrhosis. More importantly, as consumption increases, the risk of cirrhosis is greater for women than for men. Moreover, consumption of alcohol without food results in higher risk than with food. Cirrhosis can stabilize with abstinence. While alcoholic fatty liver, alcohol hepatitis and cirrhosis have been considered to be sequentially related, (that is, progressing in this order) this is not always the case. Some cirrhosis develops without hepatitis and hepatitis may have a sudden onset and a rapid course resulting in death even before cirrhosis can develop (Schneider, *et al.*, 2007; Reuben, 2007).

2.10.4. Effects on the heart

Alcohol can be beneficial or harmful to the cardiovascular system depending on the amounts consumed and the characteristics of the consumer. Low to moderate consumption has been shown to have coronary benefits for people who are 40 years and older. However, according to the WHO (2005):

> In some industrialized countries where the condition is common and injuries and violence are rare, alcohol consumption may prevent about as many deaths as it causes in some segments of the population. The patterns of drinking in many countries, however, often with heavy episodic consumption, are likely to increase rather than decrease the occurrence of coronary heart disease.

Questions have also been raised regarding the transferability of these findings of the benefits to developing countries. As coronary heart disease is associated with diet, lifestyle and age, and given that the diet of many traditional developing countries is relatively low in fat and high in fibre (a factor that is often given as one of the reasons for the comparatively low incidence of heart disease in developing countries), the findings of the protective effects may not be applicable. Moreover, even if moderate drinking is protective, heavy alcohol consumption could damage the cardiovascular system, causing heart muscle disorders, irregular heart rhythms, high blood pressure and strokes (Schneider, *et al.*, 2007).

2.10.5. Effects on blood cells

Alcohol has numerous adverse effects on blood cells and their functions. Heavy drinking can cause generalized suppression of blood cell production and the production of abnormal blood cell precursors that cannot manufacture cells. There is evidence that blood pressure increases

with increased drinking. A study in India found alcohol consumption to be a significant risk factor for hypertension. A meta-analysis found that 11% of cases of hypertension in males and 6% in females could be directly causally attributed to alcohol (Schneider, *et al*., 2007).

2.10.6. Gastrointestinal and respiratory systems

Alcohol can interfere with the structure and function of the gastrointestinal tract. For example, alcohol can impair the muscles separating the oesophagus from the stomach increasing the risk of cancer. Alcohol interferes with the muscle movement of the small and large intestines and the absorption of nutrients into the body (Schneider, *et al*., 2007).

Epidemiological research in developing countries has found a causal link between heavy alcohol consumption and pancreatitis. Eighty per cent of cases of chronic pancreatitis were attributable to alcohol.

A meta-analysis of more than 200 studies found that alcohol strongly increased the risks of various types of cancers (oral cavity, pharynx, oesophagus and larynx) and also revealed statistically significant increases in risk for cancers such as stomach, colon, rectum, liver, breast and ovaries (Schneider, *et al*., 2007).

2.10.7. Reproductive system

In men, alcohol can result in loss of libido, reduced potency, shrinking in size of testes and penis, reduced or absent sperm formation and infertility. In women, alcohol has been found to result in menstrual irregularities, shrinking of breast and external genitalia, as well as and sexual difficulties. It also affects the female reproductive capacity (Schneider, *et al*., 2007).

2.10.8. Immune system

Alcohol consumption affects various components of the immune system. Both chronic and acute alcohol consumption disrupts the immune system functions (Szabo & Mandrekar, 2009). It is evident from animal and in-vitro studies that alcohol impairs various aspects of the immune

system and, particularly, increases the susceptibility to HIV infection. It may also interfere with adherence to anti-retroviral treatment. Some evidence also suggests that alcohol may lead to accelerated progression of the disease (Schneider, *et al*., 2007).

2.10.9. Effects on the brain and central nervous system

Alcohol directly affects brain function in a number of ways. At a behavioural level, neurological disorders resulting from alcohol can result in changes in emotions, personality, impaired perception, learning and memory. The detrimental effects of alcohol on the brain may be similar to Alzheimer's disease. It has been established from autopsies that the brains of people with severe alcohol dependency are smaller, lighter and exhibit greater atrophy than those of non-alcoholics. Neuropsychological studies of people with chronic alcohol dependence have reported cognitive deficits including problems with problem solving, organising, planning and abstraction (frontal lobe functions); short- and long-term memory loss; and 14 verbal fluency, learning, and visio-spacial perceptions. Impaired co-ordination and balance have also been found (Schneider, *et al*., 2007).

Alcohol influences several neurotransmitter systems, including opiate receptors, gamma-aminobutyric acid (GABA), glutamate, serotonin and dopamine. The increase in opiate levels may explain the euphoric effects of alcohol, while its effects on GABA give it anxiolytic and sedative properties, and induce muscle relaxation and the feeling of intoxication. Alcohol inhibits glutamate receptors and long-term ingestion results in the synthesis of glutamate receptors leading to central nervous system excitability when alcohol is withdrawn (Schukit, 2009). The effects of dopamine in the ventral tegmental area may contribute to the rewarding effect of drinking and the craving as well as behavioural dis-inhibition during drinking (Rodseth, 2012).

2.10.10. Co-morbidity

Psychiatric co-morbidity is common in individuals with a history of alcohol abuse and dependence. Schizophrenia, bi-polar disorder, depression, attention deficit disorder, anxiety disorder and eating disorders have all been associated with the abuse of alcohol, though it is not always clear which condition preceded the other (Schneider, *et al*., 2007).

2.10.11. Depression

According to the WHO Global Status Report on Alcohol (WHO, 2004), there is evidence to assume that alcohol has a causal role in depression. Not only do alcohol dependence and major depression co-occur disproportionately, but also higher volumes of alcohol consumption are associated with more symptoms of depression (Graham, Frost-Pineda & Gold, 2007). While it has often been postulated that people suffering from depression "self-medicate" with alcohol (no doubt in some cases this is true), the question of which precedes the other is not yet fully resolved and/or whether there may be a third variable such as neurobiological mechanisms or genetic predisposition, which causes both to occur (Arch, *et al*., 2006). Nonetheless, evidence of a causal link from alcohol to depression is growing. Reversibility (remission during abstinence) is a key indicator for causal effect of alcohol dependence on depressive disorder and there is good evidence that abstinence substantially removes depressive disorders within a short time frame (Schneider, *et al*., 2007).

2.10.12. Alcohol dependence

The ICD-10 defines alcohol dependence syndrome as being a cluster of physiological, behavioural and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value. A central descriptive characteristic is the desire (often strong, sometimes overpowering) or sense of compulsion to take alcohol. In the WHO Global Status Report on Alcohol (2004), of 35 countries reporting levels of alcohol dependence amongst the adult population, South Africa had the highest reported figure, that is, 27.8% of males and 9.9% of females. This should, however, be interpreted with great caution, for example, as instruments and timeframes used were not standardized.

Alcohol is consistently the substance of abuse in people receiving help for substance related problems in South Africa. In the first half of 2005, between 47% (Cape Town) and 74% (Durban) of patients receiving treatment had alcohol as a primary or secondary drug of abuse (Parry, 2005). Although the number of people seeking treatment for alcohol abuse seems to be

decreasing and the number seeking treatment for the abuse of other drugs seems to be increasing, alcohol abuse remains the main reason why people seek treatment. The number of patients older than 20 seeking treatment for alcohol problems is substantially higher than that for younger patients.

2.10.13. Non-natural mortality and morbidity

Unintentional and intentional injuries are responsible for up to 10% of the global burden of disease. Internationally, alcohol use accounts for 13% of DALYs lost due to 15 unintentional injuries and 15% due to intentional injuries (Rehm, *et al.*, 2003). The amount of alcohol consumed is a major determinant of both risk and severity of injury. Alcohol plays a major role in traffic and other accidents, as well as homicides, interpersonal injury and suicide. High rates of alcohol have been found in both the "perpetrator" and the "victim". The largest number of non-natural deaths is South Africa is due to violence (48%) followed by transport fatalities (30%). Both violence and transport deaths are closely linked with alcohol (Plüddemann, *et al.*, 2004; Matzopoulos, 2005; Schneider, *et al.*, 2007).

2.10.14. Alcohol-related mortality

Data from the Non-Natural Mortality Surveillance System (NNMSS) in 2002 indicated that 46% of non-natural deaths in South Africa involved persons with blood alcohol concentrations (BACs) greater than or equal to 0.05g/100 ml (Matzopoulos, Seedat & Cassim, 2003). NNMSS data for 2003 indicated that for all causes of death, 49% had positive BACs and the mean BAC overall was 0.18g/100ml (Harris, Sukhai & Matzopoulos, 2004). Levels of BAC positivity were high for homicides (51% positive, with a mean BAC of 0.17g/100ml), suicides (35% positive, with a mean BAC of 0.15g/100ml) and transport related deaths (53.3%) (Matzopoulos, 2005).

The majority of transport-related deaths in South Africa are of pedestrians (38.8%), followed by unspecified (21%), driver of a motor vehicle (17.7%) and passenger (12.2%) of deaths. While in all categories of transport-related death, high alcohol blood levels was prevalent, this was highest amongst pedestrians (61%). This means that, by far, the largest number of transport-related

deaths in South Africa is of intoxicated pedestrians. Despite this, campaigns almost always focus on drinking and driving and not on drinking and walking!

2.10.15. Alcohol-related trauma

In 2001, 39% of trauma patients in Cape Town, Durban and Port Elizabeth had breath alcohol concentrations (BrACs) greater than or equal to 0.05g/100 ml (Plüddemann, *et al.*, 2004). Levels of alcohol positivity were particularly high for persons injured as a result of violence (73% for Port Elizabeth, 61% for Cape Town and 43% for Durban). In data gathered from a wide variety of facilities in the Cape Metropol, Peden reported that 70% of domestic violence cases were alcohol-related (Peden, 1995). From research conducted by the Department of Transport, the national daily average of persons driving under the influence of alcohol was found to have increased from 1.8% in 2002 to 2.1% in 2003 (Arrive Alive, 2005).

The differences between perpetrator and victim are not always clear. For example, victims may include people involved in fights who happened to be the ones injured or killed, or the drunk driver of a motor vehicle injured or killed in an accident.

2.11. SOCIAL AND PSYCHOLOGICAL IMPACTS

Alcohol consumption can have both social and psychological impacts even though these are more difficult to measure than the physical health impacts. However, one can look at substantive impacts on crime, patterns of interpersonal violence, and family and work problems.

2.11.1. Alcohol and crime

A national study of prisoners and parolees in 1996 found that just under half had taken alcohol or other drugs just prior to the crime for which they were incarcerated (Rocha-Silva & Stahmer, 1996). Drinking was especially linked to rape and housebreaking offences. Subsequent research in Cape Town, Durban and Johannesburg in three phases between 1999 and 2000 (Parry, *et al.*,

2004) found that, overall, 15% of the arrestees were under the influence of alcohol at the time the alleged offence took place. Regarding violent offences, arrestees indicated that they were under the influence of alcohol for 25% of the weapons related offences, 22% of rapes, 17% of murders, 14% of assault cases and 10% of robberies. Levels of alcohol-related crimes were particularly high for family violence offences at 49% (Seedat, van Niekerk, Jewes, Suffla & Ratele, 2009).

Arrestees also indicated that they were often under the influence of alcohol in cases involving property offences. For example, 22% of cases involved housebreaking and 12% of cases involved the theft of a motor vehicle. When asked why they had consumed alcohol or other drugs before committing crimes, many arrestees indicated that they consumed these substances in order to give them courage to commit the crimes (Parry, *et al*., 2004).

2.11.2. Interpersonal violence

Of the approximately 2.1 million cases of crime reported in South Africa between April 2007 and March 2008, "contact" crimes (murder, attempted murder, and rape, assault with intent to inflict grievous bodily harm, common assault, indecent assault, aggravated robbery and other robbery) accounted for 33% of all crimes. While the incidence of all contact crime showed a decrease for 2007/2008 as compared to the incidence for 2006/2007, the incidence of violent crime remains unacceptably high. For example, the murder rate per 100 000 for South Africa is 39 000, ranking 7th highest out of 11 countries (Seedat, *et al*., 2009).

Numerous studies have found an association between alcohol consumption and aggressive behaviour though not everyone who consumes alcohol gets aggressive. People with anti-social personality disorders appear to be particularly susceptible to alcohol-related aggression. People who have previously been violent under the influence of alcohol are the most likely to become aggressive when drinking again. Internationally, alcohol has been associated with numerous acts of interpersonal violence which include physical and sexual abuse, emotional and psychological abuse and neglect (Seedat, *et al*., 2009; Setlalentoa, *et al*., 2010).

Various categories of criminal behaviour have been identified as having links to drinking and driving, homicide, domestic violence, other assaults, sexual violence and child abuse. A strong link between alcohol use, crime and violence has been established by meta-analysis, with between a quarter and half of homicides or purposeful injury having shown to be attributed directly to alcohol use (English, Holman, Milne, Hulse & Winter, 1995; Single, Robson, Xie & Rehm, 1998). McClelland and Teplin, (2001) directly observed 2365 police-citizen encounters in the USA. Overall, 34% of these encounters were judged to be alcohol-involved, with the following percentages reported: violent crime and sexual assault (43%), spousal assault (43%), robbery (39%), public order/vandalism (46%) and other non-violent encounters (23%).

2.11.3. Family and work problems

Drinking can impair one's functioning as a parent, as a spouse and as a contributor to the running of a household (Mulaudzi, 2003). Drinking requires time (often spent with drinking colleagues) and this competes with time needed to carry on family life (e.g. time spent with children, doing household chores etc.).

Drinking money often takes precedence over other household needs, often leaving the family unable to afford even basic goods and services. Drinking leads to a spiral of poverty in which the drinking behaviour inhibits income capacity (through absenteeism, lack of motivation, poor quality of work, loosing employment) while any income earned is then spent on drink – at times to drown sorrows related to not having work or only having a poorly paid job. A study in Delhi, India, compared families where the husband drank at least three times a week to those where the husband drank only once a month. In the first group 24% of household income was spent on alcohol compared with 2% in the other families. The family with the drinker had significantly more debts (60% vs. 42%) and these debts were twice as large (Mulaudzi, 2003; Mothiba & Malema, 2009).

While continuing patterns of drinking threaten family subsistence, events that take place when a family member is intoxicated can also have lasting consequences – mainly through injuries and

family violence. The psychological toll on the family is often great. For example, in interviews with family members of heavy drinkers in Mexico, 73% reported feelings of anxiety, fear and depression, 62% reported physical or verbal aggression, and 31% reported family disintegration. For many mothers, the inability of the fathers to bring in adequate incomes to feed and clothe their children owing to their drinking habits, leads to depression in the mothers (Mulaudzi, 2003; Mothiba & Malema, 2009).

Violence against women and children often has severe psychological consequences for the victims (WHO, 2001). Alcohol can impair work performance through decreased efficiency and it can lead to poor workplace safety. For example, intoxication can result in errors of judgement, accident proneness and putting the lives of others at risk. Alcohol misuse also results in greater absenteeism from work and increases the risk of dismissal from work. In Costa Rica it was found that 30% of absenteeism and workplace accidents were caused by alcohol dependence. In India 15-20% of absenteeism and 40% of accidents were due to alcohol. Among Grades 8 and 11 learners in Cape Town, a significant association was found between past month use of alcohol and the number of days absent from school and repeating a grade. The odds of repeating a grade were 60% higher for learners who consumed alcohol. Whether this relationship was causal, or occurred through another factor was not established (Peltzer, Cherian & Cherian, 1999b).

2.12. SPECIAL AREAS OF CONCERN IN SOUTH AFRICA

Two areas regarding alcohol in South Africa need special mention. These are the Foetal Alcohol Syndrome (FAS) and HIV/AIDS.

2.12.1. Foetal Alcohol Syndrome (FAS)

Heavy alcohol intake during pregnancy, usually in a binge drinking pattern, occurs in over 20% of women in the Western Cape (Croxford & Viljoen, 1999). Drinking during pregnancy remains

a problem despite considerable media attention efforts by the national government to limit alcohol harm and isolated initiatives to increase universal and other preventive activities in these provinces (Chersich, Urban, Olivier, Davies, Chetty & Viljoen, 2012). Drinking alcohol during pregnancy may lead to damage to the foetus. This could be in the form of Foetal Alcohol Effects or full-blown Foetal Alcohol Syndrome (FAS). FAS is characterized primarily by damage to the brain and the central nervous system, which results in hyperactivity, attention problems, learning disabilities (e.g. problems of memory, abstract reasoning), lack of judgement and fits. Other organs such as the heart and kidneys, as well as growth may be affected. There is no cure for FAS, and most FAS children are unable to cope with normal schooling (May, Brooke, Gossage, Croxford, Adnams, Jones, Robinson & Viljoen, 2000). Moreover, many FAS children are part of "alcoholic families" who are unable to give them the special care and attention they need. The result is that many FAS children drop out of school early, are not easily employable and are susceptible to gangs, crime and peer-pressure (Croxford & Viljoen, 1999; Viljoen, Craig, Hymbaugh, Boyle & Blount, 2003).

South Africa has the highest reported rate of FAS in the world. (It must be noted though that poorer countries have never conducted epidemiological research into FAS and thus rates in these countries are not known). Other studies have also found that FAS is higher with higher levels of FAS in the Western and Northern Cape than anywhere in the world (Olivier, Urban, Chersich, Temmerman & Olivier, 2013). In poorer areas of the Western Cape the prevalence of FAS among Grade 1 learners was found to be 46 per 1000 in 1997 and this increased to 75 per 1000 in 1999. In the Northern Cape rates of 103 and 75 per thousand were found in different areas. Prevalence in three poor areas in Gauteng found rates of 12, 22 and 37 per 1000. While the Gauteng rates were lower than those of areas in the Cape, they are still far higher than even the most at risk communities in developed countries, such as the urban poor or native settlement areas in the USA. In studies in the USA and France, rates of 0,5 and 3,0 per 1000 were found. Mothers who drink alcohol in a binge fashion while pregnant and exceed 5 drinks per week per occasion, that is, more than 90mls of absolute alcohol, are especially at risk for FAS. Thus, one heavy bout of drinking may be enough to cause FAS (May, 1995).

2.12.2. Risky sexual behaviour

The misuse of alcohol is increasingly being recognised as a key determinant of risky sexual behaviour, and, consequently, an indirect contributor to HIV transmission in sub-Saharan countries. According to Morojele, *et al*. (2004), numerous cross-sectional investigations conducted among adults in this region have shown consistently that alcohol use is associated with HIV infection as well as with risky sexual behaviours, such as having multiple sexual partners (Mnyika, Klepp, Kvale & Ole-Kingori, 1996; Mbulaiteye, Ruberantwari, Nakiyingi, Carpenter, Kamali & Whitworth, 2000; Campbell, Williams & Gilgen, 2002; Hargreaves, James, Morrison, Chege, Rutenberg, Kahinde, Hayes & Buve, 2002; Fritz, Woelk, Bassett, McFarland, Tobaiwa & Stall, 2002; Clift & Barrett, 2003, Mnyika, Klepp, Kvale & Ole- Kingori, 1997; Trigg, Peterson & Meekers, 1997).

Three different but related explanations are proposed to account for the relationship between alcohol use and risky sexual behaviour. First is the argument that alcohol consumption may represent other behavioural, lifestyle, contextual and/or personality factors which are associated with engagement in high-risk sexual behaviour (Hargreaves, *et al*., 2002). Secondly, ethanol acts on the central nervous system, reduces inhibitions, and, consequently, increases people's likelihood of engaging in risky sexual and other behaviours. Thirdly, people's alcohol expectancies, that is, their expectations about how alcohol will influence their behaviour, can also influence their actual behaviour (Brown, Christiansen & Goldman, 1987).

In both qualitative and quantitative studies conducted by Morojele, *et al*. (2004) in a black township in South Africa among adults between the ages of 22 and 45 it was found that there were strong relationships between various measures of alcohol use and risky sexual behaviour. In this quantitative study, two main types of effects that alcohol consumption may have on sexual behaviour were identified, that is, drinking seems to increase the appeal of sexual episodes and it reduces people's control with respect to sexual encounters. The variables which were found to be associated with the reported increased sexual appeal owing to drinking were being young, not being married, being employed, drinking more, being a problem drinker, having more sexual partners and engaging in regretted sex (Mbulaiteye, *et al.*, 2000; Kalichman & Simbayi, 2004).

This profile seems to suggest that inexperienced, younger, heavier drinking adults are at greatest risk of having alcohol-related risky sexual encounters. Those who reported being less able to have control over their condom use after drinking were less likely to have used condoms in their lifetimes. It seems that those who were usually not inclined to use condoms might have become even less inclined to use them after drinking. However, other individuals who were most strongly committed to condom use became even more vigilant when drinking (Kalichman & Simbayi, 2004).

Men appear to be at greater risk of engagement in alcohol use-related risky sexual behaviour than women. Men are also more likely to report that they engage in sex under the influence of alcohol, that drinking increases their desire to have sex with a casual partner and that drinking worsens their ability to resist unwanted sexual advances (Kalichman & Simbayi, 2004).

2.13. SCREENING FOR RISKY DRINKING

Screening for risky drinking should be routine in primary health care clinic practice in order to prevent alcohol-related problems before they become disabling and more difficult to manage. Early identification of alcohol-related problems is important because these problems are prevalent, pose serious health risks to patients and their families, and are amenable to intervention. Brief intervention may help patients to change their behaviour. Recording the history of the patient's drinking behaviour in order to identify patterns of alcohol-related difficulties with physical and mental health, family life, legal authorities and employment, can be the most effective tool for screening (Burge & Schneider, 1999).

Research indicates that after personal reflection about the negative consequences of alcohol misuse, many drinkers reduce their drinking without formal treatment. Health care providers in primary health care clinic settings can help prevent the serious effects of alcohol-related problems by stimulating such reflection and moving patients toward healthier lifestyles (Burge & Schneider, 1999).

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

Most problem drinkers are employed, employable, or in families, indicating that the scope of the problem extends far beyond those who meet the formal diagnostic criteria. Therefore, in a primary health care clinic setting, one first identifies and then helps the patient understand and acknowledge the consequences of drinking, the presence of a problem, and the need for intervention.

Screening questionnaires

A variety of screening procedures that are intended to aid in the detection of people with harmful and hazardous alcohol consumption in clinical and primary health care clinic settings have been devised e.g. the 25-item MAST and CAGE test (WHO, 1996; Edwards, *et al.*, 1997; Cherpitel, 1997). These tests generally tend to pick up the more extreme rather than the easy cases. The MAST test, for instance, has among its items delirium tremens and hospital admission for drinking. However, the tests show remarkably good sensitivity and specificity for excessive drinking and alcoholism (Edwards, *et al.*, 1997). Thus, such instruments are of value for routine screening in a hospital setting. Questionnaires may be of value in a primary health care clinic. However, these tests, in general, have found more application as research tools than in the front line medical and social setting where paper and pencil tests provide no substitutes for vigilance, sympathetic questioning and the real skills needed for identifying drinking problems of all degrees, types and concealment (Edwards, *et al.*, 1997).

The Alcohol Use Disorder Identification Test (AUDIT) was developed by an international group of investigators at the request of the World Health Organization. Its aim is to identify problem

drinkers in primary health care clinic settings. It was designed for use by health care workers in developed and developing countries. AUDIT was designed specifically to detect problem drinkers rather than alcoholics by placing emphasis on heavy drinking and frequency of intoxication rather than signs of dependency (Haggerty, 1994). AUDIT is useful in screening for both currently harmful and potential hazardous drinking and has demonstrated high sensitivity and specificity, and it can identify mild dependence. Potentially, this is the screening questionnaire that should be of value to clinicians and researchers in the primary health care clinic in the future (Edwards, *et al.*, 1997; Cherpitel, 1997). The questions refer to lifetime alcohol experiences, as well as those in the past year, thus distinguishing between current and previous problems (Haggerty, 1994).

2.14. TREATMENT

The fact that the annual increase in new alcoholics is greater than the number who are successfully treated, and that it is from the population of non-problem drinkers that new problem drinkers emerge, requires society to make an effort to prevent alcohol abuse among people who are not experiencing any alcohol-related difficulties.

2.14.1. Primary prevention

Efforts are intended for individuals who drink alcoholic beverages but do not have alcohol-related problems, and those people who do not yet drink alcohol. The goal of prevention is to reduce the possibility of drinking problems occurring. It also involves identifying groups at increased risk including professionals, executives, young people, and women, especially those of childbearing age, and the elderly, as well as those with depression, other drug use or a family history positive for alcoholism (Edwards, *et al.*, 1997).

2.14.2. Secondary prevention

Intervention focuses on alcohol users whose drinking is causing problems, and attempts to keep these problems from becoming severe.

2.14.3. Tertiary prevention

The treatment deals with drinkers and alcoholics who are experiencing severe problems as a result of their drinking. The goal of treatment is to help these individuals stop drinking and return to a productive life (Edwards, *et al*., 1997).

2.15. INTERVENTION

Alcohol use is associated with tremendous costs to the drinker, those around him or her, and society as a whole. These costs result from the increased health risks (both physical and mental) associated with alcohol consumption, as well as from the social harm caused by alcohol. To reduce alcohol's impact on the burden of disease, as well as on other social, legal, and monetary costs, therefore, it is imperative to develop effective interventions that can prevent or delay initiation of drinking among those who do not drink, particularly adolescents, and limit consumption to low-risk drinking levels among those who do consume alcohol.

The main goal is to make problem drinkers aware of the connection between their drinking and their physical health, personal relationships, job performance and circumstances. Many problem drinkers attempt to deny these connections and they may not be desperate enough to seek help on their own. In the light of this resistance, intervention is tailored to the individual and his or her circumstances (Edwards, *et al*., 1997).

Sometimes, confrontational intervention treatment presents the problem drinker with clear evidence of his or her self-destructive behaviour. The confrontation might be produced by a spouse who threatens divorce, by an employer who threatens a loss of job or by a physician who points out the profound medical consequences of continued drinking. Such confrontations are

frequently successful in moving the problem drinker into action. In general, the earlier that intervention takes place in a drinking career, the more successful it is (Edwards, *et al*., 1997).

Current knowledge holds that the earlier the intervention in a potentially troublesome drinking career, the better the chances of reversing the trend and overcoming the problems. It is not the sole responsibility of teachers, employers or professional counsellors to carry out interventions, a remark by a friend or family members can help alert the person to the knowledge and concern that other people have about his or her drinking behaviour. Sometimes a single-session intervention might not have a successful impact; it might take several interventions before a person begins to take action. This is mainly because, when people are confronted with an aspect of their behaviour they do not wish to recognize, they often deny that it exists at all. This initial denial is often a reflection of an unconscious attempt to minimize a problem's significance and protect the ego against criticism. With sensitive, caring and supportive intervention the problem drinker will eventually feel comfortable enough to admit that he or she is having an alcohol-related problem (Fishman, 1992).

2.16. BRIEF INTERVENTION FOR ALCOHOL PROBLEMS

This section addresses the effectiveness of brief intervention and implementation in the health sector. Brief interventions are characterized by their low intensity and short duration and usually comprise one to three sessions of counselling and education. The goal is to provide early intervention. The assumption underlying screening and brief intervention in primary health care clinics is that, for identified risky drinkers, reducing overall alcohol consumption or adopting moderate drinking patterns will reduce the risk of medical, social, and psychological problems (WHO, 1996).

The effectiveness of brief intervention for risky drinkers

Brief interventions for reducing their levels of alcohol consumption and alcohol-related harm have been developed and implemented in many countries (Pennings, Leccese & Wolf, 2002).

These seek to change views of personal acceptability of excessive drinking and to encourage self-directed behaviour change. They include simple forms of structured advice and brief counselling (Whitlock, Polen, Green, Orleans & Klein, 2004). Easy access to these interventions is possible as they can be delivered by a wide range of generic practitioners (Grothues, Bishof, Reinhardt, Meyer, John & Rumpf, 2008).

An international evidence-based research has accumulated data for more than 20 years, with efficacy data originating mainly from English-speaking countries. Reductions in the volume of alcohol consumed are typically about 10-15% (Pennings, *et al*., 2002) and reductions in the proportions of hazardous drinkers are between 10-19% (Bien, Miller & Tonigan, 1993) following brief intervention. Reductions in alcohol problems of a similar magnitude and in health service utilization have also been identified (Wilk, Jensen & Havinghurst, 1997; Emmen, Schippers, Bleijenberg & Woller, 2004). Motivational Interviewing (MI), defined as "a facilitative, patient-centred counselling style for helping people explore and resolve ambivalence" (Fleming, *et al*., 1997), has become increasingly prominent within this literature.

Opportunistic screening and brief intervention (SBI) has been shown to be effective and cost-effective in reducing the health and social problems that result from excessive drinking (Anderson, 1993; Wilk, *et al*., 1997). In addition to providing health gains for patients, SBI may reduce societal costs of excessive drinking and result in economic gains for health services (Moyer, Finney, Swearingen & Vergun, 2002; Fleming, Mundt, French, Manwell, Stauffacher & Barry, 2003). Brief interventions have been viewed as having the most promise for treatment of individuals whose alcohol problems are in the mild-to-moderate range of severity. Accordingly, brief interventions may have their greatest public health influence in primary and secondary prevention efforts (Heather, 1995; Heather, 2002; Freyer-Adam, Coder, Baumeister, Bischof, Riedel, Paastsch, Welder, Rumpf, John & Hapke, 2008). A number of clinical trials for brief interventions for alcohol problems have been conducted in the primary health care clinic setting, where individuals are treated for medical problems that may be caused or exacerbated by the excessive use of alcohol (Fleming, *et al*., 1997; Parish, 1997). There is substantial evidence supporting the efficacy of brief intervention in reducing heavy drinking.

Heather (1986) reported a study whose subjects were recruited from newspaper advertisements, that sought people who considered themselves to be heavy drinkers. The purpose of the study was to compare the effectiveness of a self-help manual designed to help people to cut down their drinking with a simple information booklet. The author found that the group who received the self-help manual reported a significantly greater reduction in the previous week's mean alcohol consumption of the six-month follow-up than those who had been given the booklet. However, this difference was not maintained at the one-year follow-up.

In another study which used the media to recruit subjects, Sanchez-Craig, Spivak and Davila (1991) explored whether additional interpersonal contact was more effective than giving health-related literature on its own. It evaluated the effects of personal counselling and counselling when combined with two types of reading materials on patterns of alcohol consumption. It was found that, after one year, all groups reported a significant reduction in the mean number between the groups.

No control groups were used in the studies reported by Heather (1986) or by Sanchez-Craig, *et al*., (1991). Consequently, the extent to which the interventions (as opposed to any confounding variable) influenced the outcome cannot be assessed. Anderson and Scott (1992) found, in their controlled study of the effectiveness of minimal intervention by general practitioners, that statistically significant improvements were demonstrated one year after patients had been given simple advice about their alcohol consumption by their general practitioners. The effectiveness of minimal intervention approaches for problem drinkers in general hospital wards has also been demonstrated (Chick, Lloyd & Crombie, 1985; Babor & Grant, 1992).

In a study conducted by Chick, *et al*., (1985) the intervention consisted of a one-hour counselling session supplemented with an information booklet. One year later, statistically significant reductions in alcohol consumption were reported by both the control and treatment groups. The treatment group reported significantly fewer alcohol-related problems than the controls, and the

results were supported by changes in the results of liver function tests. All patients who were recruited to the study were males under 65 years of age and were either in employment or had recently been employed.

By excluding women, unemployed men and those over 65 years, the study failed to address the effectiveness of such interventions for a relatively large proportion of the general hospital patient population. Both the screening procedure and interventions were carried out by a nurse who was a specialist practitioner with considerable experience in counselling problem drinkers. It may be that such effects would not have been found if the interventions had been delivered by general nurses who work in acute care hospital wards and are able to spend as much time (i.e. one hour) in discussing issues relating to alcohol consumption as was given to the participants of the study.

A large international study of brief interventions for alcohol problems was conducted by a team of researchers in ten countries. The study was co-ordinated by the World Health Organization (Babor & Grant, 1992). One thousand six hundred and fifty five subjects were recruited from a variety of settings which included general hospital wards, emergency departments, primary health care clinics (PHC), health screening agencies, educational institutions and the workplace. Following recruitment to the study, subjects were assigned to one of three experimental groups for treatment: (i) a control group who received no treatment; (ii) a group who were given five minutes of simple advice about drinking; and (iii) a group (brief counselling condition) who were given more extensive advice in a 20 minute counselling session and a 30 page problem-solving manual about controlled drinking. Reductions in reported levels of alcohol consumption were seen in all groups, with the exception of the 'simple advice' group in two of the ten countries, and in a control group in one country. It appears that brief intervention may have a place in the repertoire of treatment modalities for problem drinkers.

Watson (1996), in another study, assessed the effectiveness of brief interventions, administered by a general hospital nurse, in an acute care setting, to help a sample of at-risk problem drinkers to achieve a reduction in alcohol consumption. The study evaluated the effectiveness of giving:

(i) a booklet containing information about sensible drinking limits, how to calculate consumption in standard units and suggestions about how to reduce consumption; (ii) the information as described in the booklet, but in a one-to-one personal interaction; (iii) a combination of the information in the booklet and the advice; and (iv) no treatment.

It was found that after one year, there was no significant difference in the levels of any of the outcome measures in those four groups. The results of this study did not show conclusive effects of minimal intervention. The study found that all groups reported lower levels of alcohol consumption in follow-up sessions. This finding is not confined to this study as reductions in mean drinking levels of the control group, as well as of the treatment group, was a feature in many of the studies of minimal interventions for problem drinkers (Chick, *et al*., 1985; Babor & Grant, 1992; Anderson & Scott, 1992).

The fact that there were highly significant reductions reported at the one-year follow-up for the entire sample, including the control group, for the mean levels of consumption, number of reported alcohol problems and the levels of both liver enzymes, could be because the detailed inquiry into drinking behaviour of the screening procedure acted in itself as an intervention. Its effect was to raise awareness of potentially harmful levels of alcohol consumption. This suggests that simply asking patients about alcohol consumption may act as an intervention in its own right. It could be that talking in detail with patients about the amount they drink at a time when they are unwell and, therefore, perhaps more sensitive to issues which relate to their health, is sufficient to encourage them to consider the implications of their drinking on their health.

2.17. IMPLEMENTING INTERVENTIONS

Intervention can best be implemented in the health sector. Parry and Bennetts (1998) note that "the first step is to identify alcohol problems at the primary health care clinic level." Health workers need to ask patients about their drinking practices in a way that will elicit honest answers. Secondly, there is a need to institute brief interventions for heavy drinkers at the

primary health care clinic level. There is no referring here to 'alcoholics'. Research in this area has been undertaken by the WHO in various developing countries, including Zimbabwe. This research has stressed that the target should be on consumption of alcohol itself and the focus should be on responsible drinking rather than on abstinence.

Two strategies have been proposed, namely giving brief interventions in the form of five to ten minutes of giving advice and issuing leaflets. The advice should focus, for example, on encouraging people to drink more slowly, to drink smaller quantities each time and on how to avoid intoxication. Brief intervention usually takes longer and comprises a form of condensed cognitive-behavioural therapy that includes the use of a self-help manual as well as follows visits (Parry & Bennetts, 1998).

WHO (2002) notes that in primary health care clinics, hazardous and harmful drinkers present themselves for treatment twice as often as other patients and may constitute 20% of the patients on a practice list. However, alcohol problems are responsive to early and brief intervention in primary health care clinics. A number of randomized controlled trials have shown that, in comparison with controls, hazardous and harmful drinkers receiving five to ten minutes of brief structured advice plus a self-help booklet from primary health care clinic workers will reduce alcohol consumption by an average of 25%. Primary health care clinics are a particularly valuable point of contact for the delivery of brief interventions because of the large proportion of the population who access primary health care services each year. Overall, it has been estimated that around 20% of patients identified as hazardous or harmful drinkers who receive a brief intervention will reduce their alcohol consumption.

Alcohol policy

The White Paper for Transformation of the Health System in South Africa, 1997 and the National Drug Master Plan, 1999 in South Africa have prioritized prevention and management of alcohol abuse and the integration of substance abuse in primary health care. The Department of Health (2001) has included in the service description of clinics the prevention and management

of substance abuse. Standards for PHC include health-learning materials on alcohol in local languages and competence of health staff in identifying alcohol abuse and providing basic counselling for behaviour changes and referral to NGOs specialising in substance abuse.

The Department of Health (1996) has also produced a primary health care clinic Mental Health manual, which includes a section on substance abuse and alcoholism. In 2001, the Department of Health trained trainers from all provinces on the prevention and management of substance use in primary health care. The training included the basics of early identification with the CAGE or AUDIT and brief intervention of alcohol problems. Consequently, various training workshops have been conducted on the prevention and management of substance abuse for multidisciplinary Primary Health Care staff in the provinces of South Africa.

Brief intervention is generally restricted to four or fewer sessions, each session lasting from a few minutes to an hour. The intervention is designed to be conducted by health professionals who do not specialize in addiction treatment. It is most often used with patients who are not alcohol dependent, and its goal may be moderate drinking rather than abstinence (NIAAA, 1999). However, when used for alcohol-dependence the goal is abstinence. Brief intervention has been used to motivate alcohol-dependent patients to enter specialised treatment with the goal of abstinence. Research indicates that brief intervention for alcohol problems is more effective than no intervention and often as effective as more extensive intervention (WHO, 1996).

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

This section presents the research methodology used when conducting the study. The first part describes the randomized control trial and its functions. This is followed by the description of the target population, sample and sampling procedure, instrument and data collection methods. This is followed by a description of how the data was analysed and the ethics observed while conducting this study.

3.2. RESEARCH DESIGN

Research design is a plan or blueprint of how a researcher plans or intends to conduct a study (Babbie & Mouton, 2001). It includes the methods and techniques used to collect, analyse and interpret data (Leedy & Omrod, 2001; Weiten, 2011). There are two major approaches to research, namely qualitative and quantitative approaches.

Qualitative research relies on language and the interpretation of its meaning. Data collection methods are dependent on the participants and do not involve testing of the hypothesis. Quantitative research data, however, is collected in order to determine numbers based on hypothesis testing (Creswell, 2003; Weiten, 2011). This study evaluates the effectiveness of the screening and brief intervention approaches concerning risky alcohol drinkers. The quantitative approach is more relevant to this study than the qualitative approach.

In this study, the researcher used the quantitative approach, which is a method that produces numerical data (Black, 1999). According to Thompson and Panacek (2006), scientific research is more thorough and the findings are more reliable when experiments have been used. Another advantage of using experiments is that if one wants to study the impact of an intervention on

human behaviour, experiments yield reliable data that can be repeated with more or less the same results (Weiten, 2011).

3.2.1. Experimental design

Experimental design is a research design where the researcher selects a group of subjects, does something to them, and observes the effects of what was done (Babbie & Mouton, 2001; Leedy & Omrod, 2001; Weiten, 2011). In experimental research, there are three major pairs of components, namely the independent and dependent variable; pre-test and post-test; and the experimental and control groups.

An experiment is defined as the collection of comparative data under controlled conditions (Jadad, 1998; Weiten, 2011). According to Kirk (1982), two of the distinguishing characteristics of an experimental design are the presence of one or more control groups, and the random assignment of participants to the experimental and control groups. In experimental research, the researcher controls and manipulates the independent variable in some way, in order to observe the effects of that manipulation on the dependent variable (Leedy & Omrod, 2001; Weiten, 2011). In a way, this compromises the control group in the sense that they are not receiving the manipulation on the independent variable.

The main characteristic of experiments is that they involve identifying and isolating individual aspects of a situation, making changes and observing the effects in detail. They are ideal for testing a hypothesis, and the basic aim of an experiment is to test the impact of an intervention on the outcome (Creswell, 2003; Weiten, 2011).

There are two types of experimental design, namely true experimental design and quasi-experimental design (Bennet, 2003; Weiten, 2011). The true experimental design uses a matched control and experimental group, and their equivalence is achieved by allocating numbers randomly to either group. In quasi-experimental design, however, this is not the case; non-equivalent groups are used.

The major strength of using a true experiment or randomized control trial is that it is able to hold all other extraneous variables constant, and to vary only those factors of interest. This enables researchers to determine with confidence whether the effects observed are due to the factors that have been manipulated, though it is not always possible for a researcher to have control over participants. The strength of the experimental design is that participants can be randomly assigned to conditions to rule out other rival hypotheses, but the major weakness of a true experimental design is matching the control and experimental groups, which is not always easy (Bennet, 2003; Weiten, 2011). In this study, a randomized control trial was used and is discussed in the following section.

3.2.2. Randomized control trial

A randomized controlled trial is defined as a study in which people are allocated at random (by chance, like the flip of a coin alone) to receive one of several clinical interventions (Jadad, 1998). One of these interventions is the standard of comparison or control. The control may be a standard practice, a placebo ('sugar pill'), or no intervention at all. Randomized controlled trials seek to measure and compare the outcomes after the participants have received the interventions. Because the outcomes are measured, randomized controlled trials are quantitative studies (Jadad, 1998).

After recruiting a total group of subjects, the researcher may randomly assign those subjects to either the experimental or control group (Babbie & Mouton, 2001; Weiten, 2011). In this study, the randomized control trial was used as the study aimed at evaluating the effectiveness of an intervention method (BI) for risky drinkers. A randomized control trial allows a researcher to compare two groups before intervention and after intervention to determine whether the intervention done had any impact and also to show if it can be used as an intervention method.

In this study, after the researcher had conducted the screening (pre-test), that is the administration of an AUDIT questionnaire, participants were randomly assigned to two groups, the experimental group and the control group. The experimental group was exposed to brief intervention, while the

control group was not. The control group received no intervention and was provided with only an information leaflet on cutting back consumption. Between the pre-test and post-test of participants, the experimental group received brief intervention and then after a period of six months, a post-test re-administration of the AUDIT questionnaire was done. This was done to compare the change in drinking behaviour in both groups prior to intervention and post intervention for the experimental group at Time 1 and Time 2 and for the control group at Time 1 and Time 2.

Jadad (1998) argues that Randomized Control Trials are quantitative, comparative, controlled experiments. The RCT is one of the simplest and most powerful tools in clinical research (Stolberg, Norman & Trop, 2004). RCTs are considered the most reliable form of scientific evidence because they eliminate all forms of spurious causality (Jadad, 1998). RCTs are mainly used in clinical studies but are also employed in other sectors such as judicial, educational and social research (Stolberg, *et al.*, 2004). Clinical RCTs involve allocating treatments to subjects at random. This ensures that the different treatment groups are 'statistically equivalent'.

The randomization procedure gives the randomized controlled trial its strength. Random allocation means that all participants have the same chance of being assigned to each of the study groups. The allocation, therefore, is not determined by the investigators, the clinicians, or the study participants (Jadad, 1998). The purpose of random allocation of participants is to ensure that the characteristics of the participants are as likely to be as similar as possible across groups at the start of the comparison (also called the baseline). If randomization is done properly, it reduces the risk of a serious imbalance in known and unknown factors that could influence the clinical course of the participants. No other study design allows investigators to balance these factors.

In essence, the randomized controlled trial is a study in which people are allocated at random to receive one of several clinical interventions (Jadad, 1998). On most occasions, the term "intervention" refers to treatment, but it should be used in a much wider sense to include any clinical manoeuvre offered to study participants that may have an effect on their health status.

Such clinical manoeuvres include prevention strategies, screening programmes, diagnostic tests, interventional procedures, the settings in which health care is provided, and educational models (Jadad, 1998).

Randomized controlled trials are used to examine the effect of interventions on particular outcomes such as death or the recurrence of disease. Some consider randomized controlled trials to be the best of all research designs, or "the most powerful tool in modern clinical research", mainly because the act of randomizing patients to receive or not receive the intervention ensures that, on average, all other possible causes are equal between the two groups. Thus, any significant differences between groups in the outcome event can be attributed to the intervention and not to some other unidentified factor (Stolberg, *et al*., 2004).

However, randomized controlled trials are not an answer to all clinical questions. For example, the effect of a risk factor such as smoking cannot ethically be addressed with randomized controlled trials. Furthermore, in many situations randomized controlled trials are not feasible, necessary, appropriate or even sufficient to help solve important problems (Jadad, 1998; Stolberg, *et al*., 2004). Randomized controlled trials are not appropriate for cancer screening, a situation in which the outcome is rare and frequently occurs only after a long delay. Thus, although the test for appraising the ultimate value of a diagnostic test may be a large well-designed randomized controlled trial that has patient outcomes as the end point, the trial should presumably be performed after other smaller studies have examined the predictive value of the test against some accepted standard (Jadad, 1998; Stolberg *et al*., 2004).

3.2.3. Randomized Controlled Studies

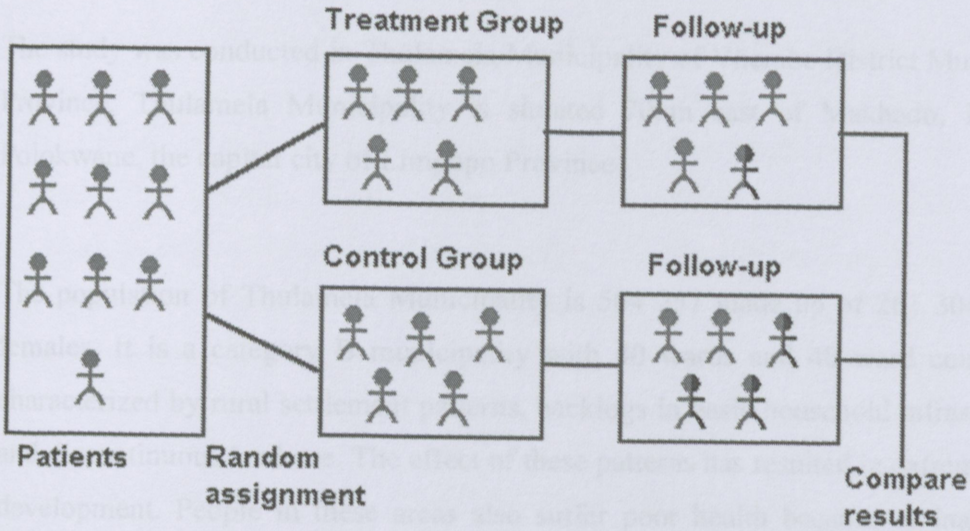

Figure 3.1. The process of a randomized control trial

A randomized controlled study is one in which:

1. There are two groups, namely one treatment group and one control group. The treatment group receives the treatment under investigation, and the control group receives either no treatment or some standard default treatment.
2. Patients are randomly assigned to all groups.

Assigning patients at random reduces the risk of bias and increases the probability that differences between the groups can be attributed to the treatment. Having a control group allows researchers to compare the treatment with alternative choices. For instance, the statement that a particular medication cures 40% of the cases tells very little unless researchers also know how many cases get better on their own (or with a different treatment).

Randomized controlled trials are the standard method of answering questions about the effectiveness of different therapies. If a researcher has a therapy question, he or she should first look for a randomized controlled trial, and then go on to look for other types of studies only if one is not found.

3.3. LOCATION OF THE STUDY

The study was conducted in Thulamela Municipality of Vhembe District Municipality in Limpopo Province. Thulamela Municipality is situated 70km east of Makhado, 180km north east of Polokwane, the capital city of Limpopo Province.

The population of Thulamela Municipality is 584 257 made up of 261 304 males and 322 953 females. It is a category B municipality with 40 wards and 40 ward councillors. The area is characterized by rural settlement patterns, backlogs in basic household infrastructure and services, and discontinuous land use. The effect of these patterns has resulted in extreme poverty and under-development. People in these areas also suffer poor health because of inadequate housing and health facilities. Thulamela Municipality is divided into two geographical areas, namely Thohoyandou and the surrounding rural settlement, and Malamulele (and the surrounding areas). The largest portion of the population is of school going age. Even though Thulamela has many people with different cultures and languages, the predominant cultures are those of the Tsonga/Shangaan and VhaVenda people which have a unique but unified history.

The study was conducted at a primary health care clinic, namely, Sibasa clinic in the Thulamela Municipality. The Vhembe District Municipality health services are offered in the following health establishments:

a) One regional hospital;
b) Six district hospitals;
c) One hundred and ten clinics;
d) Three get away clinics;
e) One health information centre;
f) Nineteen mobile clinics.

3.4. POPULATION

A population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying (Babbie & Mouton, 2001). The population of this study was comprised of people who arrived to consult health professionals at Sibasa clinic for any physical ailments. The people were interviewed by the researcher using the Alcohol Use Disorder Identification Test (AUDIT) to determine whether they were risky drinkers, in order to be included in the study. The risky drinkers were those who had a score of 8-19 on the AUDIT questionnaire. The population of this study (N=140) consisted of 105 males between the ages of 20 and 47 and 35 females between the ages of 21 and 40 at baseline.

At post-test, the population (N=132) comprised 98 males between the ages 20 and 47 and 34 females between the ages of 21 and 40. This study was part of the bigger Screening Brief Intervention project that was conducted in Limpopo Province. The study was approved by the University of Venda School of Health Sciences Research and Publication Committee and Senex. Permission to conduct the study was granted for the bigger Screening Brief Intervention project by the provincial Department of Health, and local health authorities. In this study the permission for the larger study was used. Ethical clearance was obtained for this study from the University of Venda Ethics Committee.

3.4.1. Sampling procedure

Sampling is a process used to select cases for inclusion in a research study. Shipman (1988:52) define sampling as "a systematic way of choosing a population small enough to study and large enough to be representative". The main aim of sampling is to save time, effort and to obtain consistent and unbiased estimates of the population status in terms of what is being researched.

There are two main types of sampling methods, each with different subtypes: probability and non-probability sampling (Babbie & Mouton, 2001). In probability sampling, each element of the population has the same known equal chance of being chosen at random and has the same

known equal probability of being selected. In non-probability sampling, however, the chance of selection for each element is unknown and for some elements the chance is zero (Bless & Higson-Smith, 2000; Strydom & Venter, 2002). A sample is taken to enable a researcher to learn more about the population from which that sample has been drawn because it is impossible to study the entire population.

This study used an experimental design which involved patients at Sibasa clinic being selected and randomly assigned to either the experimental group to receive the experimental alcohol intervention or to the control group to receive information leaflets and no intervention. The researcher administered the AUDIT questionnaire to screen participants. Following informed consent and completion of baseline assessment prior to intervention, the researcher drew a randomly computer-generated group assignment in a sealed envelope to determine under which experimental group each participant should fall. The two groups to which they were put were the SBI experimental group and the control group (receiving information leaflet on cutting back). Random assignment occurred following the baseline assessment.

Participants who met the criteria were asked to participate in the study. Criteria for inclusion in the study were that prospective participants had to be over 18 years old, that they had to be both males and females, and that after screening, should have scored between 8 and 19 on the AUDIT questionnaire. Those who scored 20 or more on the AUDIT were referred to the hospital for further management.

3.4.2. Sample size

A sample is defined as a small subgroup of a population or representative group of people selected from the population the researcher is interested in studying (Babbie & Mouton, 2001). The size of the sample depends on the type of study. In experimental designs, for example, only a few participants can be used. Strydom and Venter (2002) are of the opinion that 30 participants are enough to perform statistical procedures, although there are some authors who feel that a minimum of one hundred is required. Some writers argue that when one is using an experimental

design that involves two or more groups, there should be a minimum of 30 participants per group.

The power of a statistical test is the probability that the test will reject the null hypothesis when the alternative hypothesis is true; that is, the probability of not committing a Type II error. As the power analysis increases, the chance of a Type II error decreases. Power analysis can be used to calculate the minimum sample size required so that one can be reasonably likely to detect an effect of a given size. Probabilities of 0.05 (1 in 20); 0.01 (1 in 100) and 0.001(1 in 1000) increase the chances of rejecting the null hypothesis when the null hypothesis is false, decreasing the chances of a Type II error.

Priori power analysis is considered the ideal type of power analysis. Researchers specify the size of the effect to be detected; that is, the measure of the distance between H0 and H1), the α level and the desired power level (1-β) of the test. Faul, Erdfelder, Buchner & Lang (2009) have argued that priori power analyses are ideal in that low error probabilities α and β can be achieved for any specification of the effect size; however, the calculated sample sizes are usually much larger than what is considered manageable in behavioural research. They argue that other factors like financial constraints, time constraints and methodological reasons such as sample heterogeneity in the case of data aggregation across studies prohibit the use of ideal sample size. Assuming that a behavioural scientist has arrived at a maximum N that can be achieved given the institutional constraints of the research, the N will most likely be smaller than the ideal N as determined by priori power analysis. Thus the only way to arrive at a reasonable power level is to increase the chances of committing an error (Faul, *et al.*, 2009). In this study, priori statistical power calculation was not done.

Prajapati, Dunne and Armstrong (2010) recommended that if the priori power analysis was not done then the post hoc power analysis can be done. Post hoc analysis involves determining the level of statistical power achieved for a given sample size, effect size and alpha level. Therefore this type of power analyses is most useful at the end of a study. What is actually important here is that the clinically relevant effect size is specified and not the actual effect size found based on the results of the study.

3.4.3. Blinding

Blinding is a practice where study participants are prevented from knowing certain information that may somehow influence them, thereby affecting the results of the study. To ensure that the highest degree possible that the intervention is responsible for any noted differences between the two groups, people involved in the gathering or analysing data might also be blinded to knowing who is being given the treatment and who is not (Day & Altman, 2000). In this study, the participants were blinded in the sense that they did not know whether they were assigned to a control group or an experimental group.

3.5. RESEARCH INSTRUMENT

This study adopted the AUDIT (Alcohol Use Disorder Identification Test), which is a screening tool that was developed by WHO in 2001. The AUDIT which is a 10-item questionnaire provides a systematic screening (see appendices), of alcohol use (Babor & Grant, 1992; Babor, Higgins-Biddle, Saunders & Monteiro, 2001). The AUDIT is administered either as an oral interview or as a self-report questionnaire and is recommended for screening in a primary health care setting. The screening total score is considered a simple way to provide each patient with an appropriate intervention, based on the level of risk. Brief intervention strategies are recommended for non-dependent risky drinkers (Babor & Higgins-Biddle, 2001). The main advantage of using a questionnaire is that it is cheap and is also quick way to collect data from a larger group (Wilson & Sapford, 2006). The SBI methods were copied from the WHO collaborative study on brief interventions (WHO, 2001).

Alcohol use in this study was assessed using the AUDIT. The AUDIT is a measure of the prevalence of alcohol use. The AUDIT's 10 items cover the three conceptual domains of consumption, dependence symptoms, and alcohol-related consequences that were intended to parallel the World Health Organization concepts of hazardous drinking, alcohol dependence, and alcohol-related harm. Because AUDIT is reported to be less sensitive at identifying risky drinking in females (Freeborn, Polen, Hollis & Senft, 2000), the cut-off points of binge drinking

for females (Abiodun, 1996) were reduced by one unit as compared with those of males (Chinyadza, *et al*., 1993). Furthermore, an assessment of alcohol use using a cut-off score of 8 or more was made for hazardous or harmful drinking. Hazardous drinking is defined as a quantity or pattern of alcohol consumption that places patients at risk for adverse health events, while harmful drinking is defined as alcohol consumption that results in adverse events (e.g., physical or psychological harm).

3.6. VALIDITY

Validity refers to the extent to which an instrument measures what it is intended to measure (Bennet, 2003). There are two types of validity in experimental research, internal and external validity. There are different factors that are relevant to both internal and external validity.

Maximising validity and minimizing bias

The question here is: To what extent can the intervention, rather than other influences, be considered to account for differing outcomes between the treatment and control groups? If not controlled in experimental design, these factors could produce effects that will interfere with the effect of the experimental stimulus. However, in randomized control trials, by employing a control group and random assignment, the RCT design minimizes bias and threats to internal validity by equalising the conditions on all "other influences" except for the intervention. Internal validity deals with the degree to which the findings of the research can be generalized to the whole population represented by the participants.

The following threats are common to internal validity that the random assignment addresses:

- **History.** External events that occur during the course of a study that could explain why people changed. An example is a life event such as a death in the family or being laid off from work. Negative life events, such as these, may offer an alternative explanation for study outcomes.

- **Maturation.** Psychological and biological processes that occur within individuals over the course of a study that provide an alternate explanation of why they changed.
- **Selection.** Another threat to validity may occur if the experimental and control groups differ at baseline.
- **Regression to the mean.** The tendency for extreme scorers to regress to the mean on subsequent measurements.
- **Attrition.** The rate of loss of participants from the study that differs between the intervention and control groups.

Minimising threats to external validity

The question here is: To what extent can the results be extended to people, settings, and interventionists different from those used in this particular study?

These are common threats to external validity that an RCT can address. They are:

- **Sample characteristics.** This refers to the extent to which we can generalize from the study sample to the population as a whole (or the population of interest).
- **Hawthorne effect.** People tend to react differently when they know they are being observed.

In this study, the observed factors that posed a threat to the validity were history, experimental mortality and the Hawthorne effect.

- History posed a threat because there were many events that could have happened between Time 1 and Time 2. In order to minimize that threat, the distance between Time 1 and Time 2 was six months.
- Experimental mortality was minimized by using participants from the same local area.
- The Hawthorne effect was difficult to control, but participants were informed about how it was important for them not to please the researcher, and to be honest in their responses.

- Pre-testing could have sensitized participants so that their response to treatment would be different.

In this comparison, outcomes for people randomly assigned to receive the new treatment are compared with those of people assigned to receive no treatment at all. The question is whether the new treatment produces any benefit at all, over and above the change due to the passage of time or the effects of participating in a study. A challenge with this control condition is that people receiving no treatment may find their own treatment outside the bounds of the study.

3.7. RELIABILITY

Reliability is the extent to which the instrument gives the same results after re-administration; this is re test reliability. The AUDIT is currently the only instrument specifically designed to identify hazardous and harmful drinking and is valid for detecting heavy drinking also in a general population sample (Aalto, Alho, Halme & Seppä, 2009). Cronbach alpha for the AUDIT was .78 for this sample. The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization as an effective screening instrument for alcohol use problems among patients seeking primary care for other medical problems in international settings, including African countries, namely Kenya and Zimbabwe (Emmen, Peters, Elving, Bredie, Wollersheim, Bleijenberg & Schippers, 2005; Babor, *et al.*, 2001). It has also been widely used as a standard tool in South Africa (Peltzer, 2006; Peltzer, Davids & Njuho, 2008).

3.8. DATA COLLECTION

The 10-item Alcohol Use Disorder Identification Test (AUDIT) (Babor, *et al.*, 2001) assesses alcohol consumption level (3 items), symptoms of alcohol dependence (3 items), and problems associated with alcohol use (4 items). In South Africa, a standard drink is 12g of alcohol. Freeborn, *et al.* (2000), reported that AUDIT is less sensitive at identifying risk drinking in women, that is, five or more units of alcohol per occasion. Therefore, Freeborn, *et al.*, (2000)

recommend that the cut-off points of binge drinking for women be four units of alcohol per occasion and five units for men. Responses to items on the AUDIT are rated on a four-point Likert scale ranging from 0 to 4 for a maximum score of 40 points. Higher AUDIT scores indicate more severe levels of risk with scores of 8 indicating a tendency to problematic drinking.

In this study, the AUDIT was administered at the baseline to determine those who would be included in the study. Patients who tested positive, that is, those with a cut-off score of 8-19 on the AUDIT questionnaire were eligible to participate in the study. After randomization, participants were grouped into an experimental group and the control group. The experimental group received intervention according to their category of alcohol consumption and the control group received only a leaflet on cutting back consumption. After six months, a follow-up was done, and the AUDIT was re-administered to collect post-test data. The AUDIT was administered in Tshivenda, which is the language that is spoken by nearly all the patients at the clinic.

Data were analysed by means of statistics. Statistics is defined as the study of methods for describing and interpreting quantitative information, including techniques for organising and summarizing data, and techniques for making generalizations and inferences. Numerical data can make a valuable contribution to evaluation research. The use of statistics in evaluation serves three primary purposes, namely:

- It is used to summarize a large amount of information through measures of central tendency or dispersion.
- It provides for frequency distribution to exhibit clusters and separation of responses.
- It provides a level of confidence that the data truly are representative of the intervention.

The collected data were captured and analysed using the Statistical Package for Social Sciences (SPSS). SPSS is a set of computer programmes that can be used to do different types of

statistical analyses. The advantage of using a statistical programme is that is enables one to calculate statistics quickly and accurately. SPSS can be divided into two categories, namely, data management and data analysis procedure.

The AUDIT score served as the dependent variable and the data from the AUDIT were analysed by means of a 2 x 2 repeated measures analysis of variance (ANOVA), with Time (pre-post intervention) being the within factor and Group (experimental-control) being the between factor. Missing data owing to non-response were deleted on an analysis-by-analysis basis. The researcher used an intent-to-treat analysis by including all participants who completed baseline assessments and who were randomized to intervention conditions. Individual cell sizes vary owing to missing values. Statistical significance was defined using the conventional value of $p<.05$.

Retention and attrition of participants

A total of 140 patients (35 women and 105 men, of mean age 30.7 years, SD=6.5 years, ranging from 20 to 47 years) enrolled in the study, completed baseline assessments, and were randomized to two conditions. All participants in the experimental condition (N=70), could be followed up (N=70), while participants in the control condition (N=70) 58 completed the follow-up interview (attrition rate of 17.1%). The overall attrition rate was 8.6%.

3.9. THE INTERVENTION

After the screening and assignment of participants to the control group and experimental group, those assigned to the control group were provided with the self-help leaflets on cutting back. They received no counselling. For ethical reasons only the leaflet that deals with cutting back consumption was given to this group.

The experimental group received the intervention. The brief intervention protocol indicates four components, namely: ask about alcohol use, assess, advise and assist. This includes direct feedback

about the researched concerns, discussions about the impact on the patients' health, setting goals, behavioural modification strategies, direction to self-help resources and follow-up and reinforcement (WHO, 2001).

According to the WHO protocol of brief intervention, after the administration of the AUDIT, the positive results are indicative of the next step which is provision of an appropriate intervention that meets the needs of each patient. Patients who score negatively in the AUDIT should be reminded about the benefits of low risk drinking or abstinence and told not to drink in certain circumstances such as when operating a vehicle or machinery, when pregnant or when considering pregnancy, if a contra-indicated medical condition is present or after using certain medications such as sedatives, analgesics and selected antihypertensive medication (WHO, 2001).

There are four levels of risks identified in the protocol and are as follows:

Zone I refers to low-risk drinking or abstinence.

Zone II consists of alcohol use in excess of low-risk guidelines and considered hazardous. It is generally indicated when the AUDIT score is between 8 and 15. A brief intervention using simple advice and patient education materials is the most appropriate course of action for these patients (WHO, 2001).

Zone III consists of alcohol use that is considered harmful in that the patient has started to experience problems because of alcohol use. The AUDIT score in this category is between 16 and 19. A combination of simple advice, brief counselling and continued monitoring with further diagnostic evaluation if the patient fails to respond or is suspected of possible alcohol dependence (WHO, 2001).

Zone IV is suggested by an AUDIT score in excess of 20. These patients are to be referred to a specialist for diagnostic evaluation and possible treatment for possible alcohol dependence. If the specialist services are not available, these patients can be managed in primary care. Patients can be managed first at the lowest level of intervention by their AUDIT score. If they do not respond to the initial intervention, they should be referred to the next level of care (WHO, 2001).

Brief intervention for hazardous and harmful drinking constitutes a variety of activities characterized by their low intensity and short duration. They range from 5 minutes of simple advice about how to reduce hazardous drinking to several sessions of brief counselling to address more complicated conditions. Intended to provide early intervention before or soon after the onset of alcohol-related problems, brief interventions consist of feedback of screening data designed to increase motivation to change drinking behaviour as well as simple advice, health education, skill building and practical suggestions. The elements of brief intervention protocol are as follows: present screening results, identify risks and discuss consequences, provide medical advice, solicit patient commitment, identify goals, such as reduce drinking or abstinence and give advice and encouragement (WHO, 2001).

In this study, participants were randomized and allocated to the experimental group, completed AUDIT at baseline and received brief intervention for alcohol reduction. The goals of brief intervention were to identify alcohol-related problems, to provide sensible drinking leaflets emphasizing the idea of sensible drinking limits and to make sure that patients realize that they are in the low-risk drinking category, and to provide feedback on their alcohol use,

The participants whose alcohol consumption was categorized as Zone II level of risk received a 10 minute session, which involved giving them feedback on their drinking behaviour as indicated by their AUDIT score, encouraging them that they had not yet developed problems related to alcohol, but that if they kept on drinking the way they were drinking, they were likely to develop alcohol-related problems. During the session, they were given simple advice about how they could reduce their hazardous drinking. Basically, clients were provided with information about sensible drinking and the effects of drinking.

The participants whose alcohol consumption was consider as Zone III level of risk received a 25 minute session of brief counselling. The session comprised the basic elements of brief intervention which involved providing participants with feedback on their drinking behaviour as indicated by their AUDIT score, identifying risks, discussing consequences of their alcohol consumption, providing medical advice, soliciting their commitment, identifying their goal of either reducing consumption or abstinence, and then giving them advice and encouragement. They were

educated the effects of alcohol on one's body and other areas that are problematic owing to alcohol use. They were also assessed at that point in terms of their readiness to change their behaviour. This was done using a scale of 1-10 to determine how ready they were to change the way they had been drinking. Depending on the readiness to change, the drinking behaviour from pre-contemplation and/or contemplation, the researcher then talked about how to cut back or stop drinking. The researcher helped the clients to identify situations that might tempt them to go back to this unhealthy drinking behaviour, and together with the researcher, the clients devised strategies to deal with those situations. Then the clients were also prepared in terms of how to deal with relapses and encouraged to return if there were any challenges. Clients were also informed that they would be contacted by the researcher after six months, to check on them and how they had been progressing since this intervention.

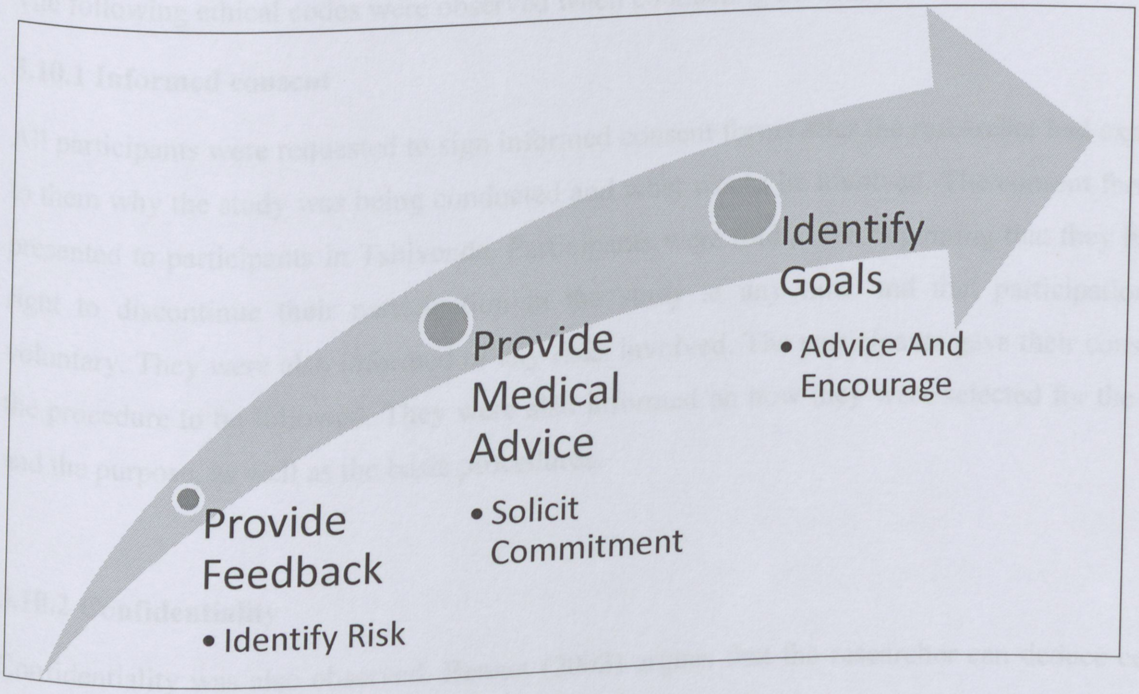

Figure 3.2. The process followed from administering AUDIT to intervention

Post intervention

The AUDIT was re-administered to 132 participants six months after the intervention. All participants (N=70) who were in the experimental group were re-assessed and only 62 from the

control group were re-assessed. Follow-up or re-assessment was done at the patients' homes and some were done telephonically. The assessment was done to determine whether the intervention had led to any behavioural change. It was assumed that after the intervention, if the control group showed no change, and the experimental group showed substantial change, then the change could be due to the intervention. The pre- and post-tests were used to evaluate the effectiveness of brief intervention. Data was collected from both groups at two different points in time, Time 1 (pre-test) and Time 2 (post-test). The disadvantage of the pre-test and post-test is that the pre-test often sensitizes participants to the post-test questions, when the same questions are used for both pre-test and post-test.

3.10. ETHICS

The following ethical codes were observed when conducting the study:

3.10.1 Informed consent

All participants were requested to sign informed consent forms after the researcher had explained to them why the study was being conducted and what would be involved. The consent form was presented to participants in Tshivenda. Participants were told at the beginning that they had the right to discontinue their participation in the study at any time and that participation was voluntary. They were also informed of any risks involved. The participants gave their consent to the procedure to be followed. They were also informed on how they were selected for the study and the purpose, as well as the basic procedures.

3.10.2 Confidentiality

Confidentiality was also observed. Bennet (2003) argues that the researcher can deduce certain personal information from the participants' responses. Therefore, the researcher is obliged not to divulge the information to any person. There are three main reasons for declaring confidentiality. It improves the quality and honesty of responses, especially on sensitive issues. It also encourages participation in the study and therefore increases the representivity of the sample, and lastly confidentiality is offered to protect a person's privacy (Weiten, 2011).

In this study, numbers were assigned to questionnaires which were linked to the names of the participants. Their names, with the corresponding number on the questionnaire, were written in a book and this information was kept in a safe place. The researcher was the only person who had access to that book. This was done so that when the participants had completed the post-test questionnaire, the researcher would be able to match the participants' numbers and names so that they could complete the same questionnaire. Study findings were honestly reported.

3.10.3 Compensation

Participants did not receive any remuneration for completing the baseline and for returning to the clinic for the follow-up assessment. Following the six-month follow-up, participants in the health education control group were offered the experimental alcohol reduction intervention.

All study procedures were approved by the University of Venda Research Ethics Committee and the Limpopo Provincial Department of Health in South Africa, as well as District and clinic authorities.

3.11. CONCLUSION

In this chapter, the researcher discussed the type of research design used, namely the experimental or randomized control trial used in this study. Although there are some disadvantages associated with randomized control trials, as with any other designs, this design is a powerful tool for conducting an intervention study. Different threats to validity were identified. Data were collected at pre-test and at post-test levels, and an intervention was conducted with the experimental group before the second assessment. The following chapter presents the findings of the study.

CHAPTER 4: FINDINGS

4.1. INTRODUCTION

In this chapter the findings of this study are presented.

4.2. DATA ANALYSIS

AUDIT score results

Paired samples tests analyses found a significant reduction of the AUDIT score in both the intervention ($t=15.47$; $P<0.001$) and the control ($t=11.28$; $P<0.001$) group, although the experimental group had a higher reduction than the control group. Using ANOVA, there was no overall significant intervention effect between experimental and control groups at a six month follow-up (see Table 4.1).

Table 4.1: AUDIT score reduction outcomes among participants at baseline and 6 months follow-up following intervention (N=140)

	Experimental	Control	ANOVA	
	M (SD)	M (SD)	**F**	**P**
AUDIT score*			.405	0.526
Baseline	13.1 (3.8)	12.7 (3.2)		
Six month follow-up	7.0 (3.6)	8.1 (4.3)		

At baseline

Participants in both control group and experimental group were categorized into 3 zones, that is, zone II, III and IV.

Post intervention

Participants were re-assessed using the AUDIT questionnaire six months after the intervention. The results of the post-test are shown below.

The sample included 132 patients, 70 in the experimental group and 62 in the control group. The mean age of the experimental group was 30.8 (SD=6.5) and the control group 30.6 (SD=6.6), *t* =.23, p =.815. There were also no significant differences of other demographic variables: In the experimental group there were 54 men and 16 women, and in the control group 51 men and 19 women (χ^2=0.34, P=.558).

Participants were categorized according to the zones. The results indicate that there was a shift in drinking behaviour, with a new category of drinkers that was not there during pre-testing, namely zone1. Even though the control group did not receive any intervention, there was change in the drinking behaviour. Participants in the experimental group received intervention and the results indicate that there was also a change in their drinking behaviour.

Zone I- This is for people who scored 1-7 in the AUDIT. The current study only included the low risk drinkers. People who fell under this category at baseline were not included in the study. At the six month follow-up, those participants who were risky drinkers had moved from other zones to this zone. There were 17 males in the control group and 10 females from the control group, while 32 (24.4%) males and 11 (8.3%) females were in the experimental group. These participants were referred to as sensible drinkers. Normally these people drink to relax or socialize. Their intervention entailed giving them feedback on their drinking and encouraging them not to go

beyond this way of drinking, as well as providing them with information on the effect of drinking alcohol.

Zone II- At baseline, the number of participants who were found eligible to participate in this study were 97; there were 68 males (48.5%) and 29 females (20.7%) who scored 8-15 on the AUDIT. At six months post intervention, there were 22 (16.6%) males and five (3.8%) females in the control group, while 20 (15.2%) males and four (3.0%) females were in the experimental group. They are an at-risk group; that is, if they continue to drink the way they are, they might start to experience problems owing to their alcohol intake. Their intervention entailed giving them feedback on their drinking and providing them with information on the effect of drinking alcohol as well as talking to them about cutting back.

Zone III- At baseline, participants who were found eligible to participate in this study were 38, 19 males (13.5%) and 2 females (1.4%) in control group and 14 males and 3 females in the experimental group. The participants scored 16-19 on the AUDIT. At six months post intervention, there were four (3.0%) males and three (2.3%) females in the control group, while two (1.5%) males and no (0%) females were in the experimental group. Their intervention lasted for 30 minutes. They were given feedback on their drinking, information on the effect of drinking alcohol and information on how to reduce their drinking. After providing them with the information the researcher assessed their readiness to change their drinking behaviour. Depending on their readiness to change, the researcher then helped them to plan their behaviour change and then to action.

Zone IV- This group is referred to as the dependency drinkers. These people had already developed some psychological dependence on alcohol and were unable to control their drinking. At baseline, participants who were found eligible to participate in this study were one male (%) and no females (0%) who scored 8-15 on the AUDIT. At six months post intervention there were one (0.75%) male and no (0%) females in the control group while no (0%) males and one (0.75%)

female were in the experimental group. All the processes that were followed above apply with regard to these groups. The group was then referred to hospital for further management.

When classifying the consumption behaviour by AUDIT score, comparing before Brief Intervention and at six months follow-up, and among the experimental group at before Brief Intervention among the 70 risky drinkers, 42 were found to be hazardous drinkers, seven were harmful drinkers and one was a possible alcohol dependent drinker. After a six month interval among the experimental group consisting of 70 risky drinkers, 43 reduced their drinking to low risk drinking, 24 were hazardous drinkers, two were harmful drinkers and one remained a possible alcohol dependent drinker. It is evident that after the intervention at the six month interval, there was a decrease in drinking behaviour from high risk to low risk drinking.

As far as consumption behaviour in the control group is concerned, at baseline there were 70 risky drinkers, of these 48 were hazardous drinkers, 21 were harmful drinkers and one was a possible alcohol dependent drinker. After the intervention at the six month interval, 62 participants were assessed. At the six month follow-up among the 62 risky drinkers in the control group 27 had reduced their drinking to that of low risk drinkers, 27 were hazardous drinkers, seven were harmful drinkers and one remained a possible alcohol dependent. Noticeably, 27 risky drinkers had become low risk drinkers.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

In this chapter the findings of the study and literature control are presented.

5.2. Discussion

It emerged from this study that there was a significant reduction in the drinking patterns of both groups. Other randomized controlled trial studies had previously found that once the participants had been subjected to questions about their behaviour, they changed their behaviour whether exposed to intervention or not. However, it is not surprising that findings like this reveal behaviour changes even in the control group; this has been confirmed by previous studies. A study by Godin, Bélanger-Gravel, Amireault, Vohl, and Pérusse (2011) discovered that asking questions about cognition regarding physical activity positively influenced subsequent self-reported participation in the risky drinkers' behaviour over a three-month period. There could be different reasons why people change their behaviour post intervention, whether they are exposed to intervention or not. Some previous researchers have argued that the change in behaviour could be due to mere-measurement effect. According to French and Sutton (2010), this mere-measurement effect is also more likely to be detected when health-related behaviours are subjectively assessed.

A study conducted by Hermansson, Helander, Brandt, Huss and Roonberg (2010) found no significant differences between intervention groups and control groups. They concluded that alcohol screening may in itself cause reduction in the drinking. In agreement with a previous observation only very few tested positive for both baseline and follow-up alcohol screening. These results are also supported by this study. Of those enrolled in this study based on a positive alcohol screening results who also attended follow-up session after six months, only about 62 participants tested positive. Those allocated to the control group received no feedback about their

screening results; this may suggest that alcohol screening can in itself lead to a reduction in drinking.

Previous studies have reported that assessing only intention by means of a few items, changes subsequent performance of studied behaviours at follow-up (Fitzsimons & Williams, 2000; Sprott, Smith, Spangenberg & Freson, 2004; Levav & Fitzsimons, 2006), including physical activity (Williams, Block & Fitzsimons, 2006).

The precise mechanism behind the mere-measurement effect is still a matter of debate (French & Sutton, 2010). At this time, the dominant explanation of this effect is that asking behavioural intention questions heightens the accessibility of the person's attitude towards the behaviour, which in turns increases the likelihood that the behaviour will be adopted (Morwitz & Fitzsimons, 2004).

Other researchers have attributed this to the possibility of a cross-over effect that is present. Beich, Gannik, Saelan, and Thorsen (2007) argue that having been primed by the screening questionnaire, some control patients may have become more aware of their drinking and may be more open to discussing alcohol use issues with their doctors. In their study, they tried to minimize this effect by early randomization of all participants. This made it possible for them to avoid any feedback on the screening result being given to control-group patients. Controls merely took place in a rolling survey, and neither the patient nor the doctor knew about the screening result at any point.

Other researchers argue that changes in the measured behaviour of the control group should be viewed with caution because there might be different reasons that the control group behaviour changes even if there was no intervention. Many factors can be attributed to the change in the behaviour of the control group other than the assessment impact of clinical trials.

a) Blinding of study purpose (investigation of changes in alcohol consumption)

The previous researchers argue that a lack of blinding of subjects regarding the purpose of the studying can trigger social desirability bias, defined as the inclination of participants to give the researcher what they think the study is designed to find (Babor, McRee, Kasselbaum, Grimaldi, Ahmed & Bray, 2007; Kypri, 2007; Nye, Agostineli & Smith, 1997). As Daeppen, Gaume, Bady, Yersin, Calmes, Givel & Gmel (2007) maintain "there is reason to expect that these participants may have been aware of the nature of the study and adjusted the self-report in some manner".

b) Sample mix

The other reason for a positive change in a control group is attributed to sample mix. The previous researchers argue that enrolment may be affected by design elements, such as re-imbursement level or time requirements for completion of study procedures. In a non-treatment population, telegraphing the purpose of the study in consent form may predispose only clients who are already considering change to enrolling. They argue that it is common in the clinical research setting for patients to conceal substance abuse for fear that labelling might negatively influence a practitioner's willingness to provide medical care. Moss (2007) cites social control theory as a contributing factor to this phenomenon and social learning theory as the context for consequences of non-blinding.

The sample mix for brief alcohol intervention studies is also affected by the rate of the capture of eligible patients. Refusal to enrol in studies is more common in the primary care settings where patients are identified by screening, and alcohol use is rarely the presenting problem. In particular, small samples and randomization without blocking for problem intensity can result in a skewed distribution of acuity. If the sample is weighed toward the low end of the scale (high risk drinkers), there will naturally be fluctuations over time in consumption if the sample consists of primarily dependent drinkers who consume at outlier levels, and there will be a greater tendency to observe variations in measurement as a result of regression to the mean (Morton & Toggerson, 2005).

Moss, (2007) argued that assessment can raise an individual's awareness of risky drinking, initiate self-monitoring and lead to recognition of a discrepancy between current behaviour and a personal normative standard, communicate implicitly personal responsibility and impel a need for a change creating bias towards the null (Kypri, 2007). This type of connection is a final component of motivational intervention to reduce unhealthy alcohol use.

c) Procedures for control condition discharge

The argument here is that brief interventions in clinical studies require the control groups to receive a combination of normative feedback, and advice or referral. Standards of clinical care require that results be addressed by practitioners and in many countries institutional review boards require that control groups receive advice and/or referral resources. (Epstain, Drapin, Yusko, Cook, McCrady & Jensen, 2005; Clifford & Maisto, 2000).

d) Regression to mean

Alcohol intake varies over time and by season, except in the most dependent of drinkers (Dawson & Room, 2001). Regression to the mean at the time of repeated measurement may be a longer factor in self-reported declines in alcohol intake of control groups. Regression to the mean is to be expected, because outcomes conditions that vary over time are being measured. Measuring these outcomes with, admittedly imperfect instruments, an outlier value at enrolment is likely to be expected with a more moderate value at follow-up. Because of this variation, there is likely to be measurement bias because observations at Time 1 and at Time 2 may not reflect a true distribution (Morton & Toggerson, 2005; Finney, 2005).

e) Measurement/analysis issues

Variance in alcohol consumption end point is often larger with skewed distribution or outliers that may reduce statistical power and can complicate analyses. The treatment of outliers and transformation of data to account for skewedness must be considered for consumption endpoints. In order to limit inadvertent moderators of control group drinking, study participants must be blinded. Daeppen *et al*, (2007). Using a briefer version of a standardized instrument, that is,

replacing the long questionnaire AUDIT with also validated AUDT C which has three questions Kypri (2007). Nye, Agostineli and Smit (1999) suggest that normative feedback must be avoided, so as not to create heightened awareness that mimics intervention. Kypri (2007) proposes attention to a randomization procedure that will ensure a wide range of subjects and thus limit potential for bias; Morton & Toggerson (2005) stresses the importance of avoiding selection of the most severe cases in order to avoid pitfalls associated with regression to the mean.

In the current study, however, the experimental group had a higher reduction than the control group. This may be attributed to the brief intervention that was used. However, this analysis needs to be interpreted with caution. Although, overall, the data are consistent with the intervention being effective, the size of the true effect was probably smaller than the researcher had anticipated.

In the present study, brief intervention did not have an additional effect in comparison with the AUDIT screening. Most published brief intervention studies that did not find any additional benefit of brief intervention showed a decrease in alcohol use both in experimental and control groups. This parallel decrease was explained either by a Hawthorne effect, a natural history effect, or by regression to the mean (Beich, *et al*., 2007). A study conducted by Beich, *et al.* (2007) did not find any decrease in alcohol use in either group. This can be explained by the fact that they included 83% of all patients screening positive in the AUDIT, and that the intervention was provided without delay as recommended (Babor & Grant, 1992; Babor, *et al*., 2001). In the current study, this is possibly due to the lower impact of brief intervention in this target population.

Brief intervention has previously been found to be less efficient among alcohol dependents (Bien, *et al*., 1993; Madras, Compton, Avula, Stegbauer, Stein & Clark, 2009). Furthermore, lack of differences between interventions may simply show that screening alcohol use with AUDIT and providing feedback about the score has a positive impact on alcohol-drinking behaviour (McCambridge & Day, 2008). This phenomenon has been suggested by different studies and could correspond with what Jenkins, McAlaney and McCambridge (2009) call reactivity assessment. The

results were also possibly due to spontaneous adaptations of the naturalistic treatment as usually received by both groups following AUDIT screening or BI.

The results also indicate that the overall effect of intervention in the intervention group was not statistically significant. This means that even though it cannot be disputed that the intervention had an impact, the impact was not very great or was not very significant compared to the change in behaviour that occurred in the control group. In their study Beich, *et al.*, (2007) who screened only 6897 patients, found 1087 (15.8%) risky drinkers, of whom 906 (13.1%) non-dependent drinkers became study participants and 537 (7.8%) were followed up. In another primary health care trial Senft, Polen, Freeborn & Hollis (1997) used the AUDIT to define the trial group, and included 78% of those who screened positive. The main intervention was not delivered by the doctor, but by a skilled counsellor. Nevertheless, only a modest, temporary reduction in the drinking frequency, but not in the overall amount of alcohol consumption, was achieved in this study.

Several systematic reviews have confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals (Bien, *et al.*, 1993; Kahan, Wilson & Becker, 1995; Wilk, *et al.*, 1997; Poikolainen, 1999; Moyer, *et al.*, 2002; Ballesteros, Gonzalez-Pinto, Querejeta & Arino, 2004). Until lately, little attention has been paid to the issue of the external validity of these results (Edwards & Rollnick, 1997; Beich, *et al.*, 2007. A systematic review (Berltholet, Daeppen, Weitlisbach, Fleming, Burnand, 2005) on the efficacy of brief alcohol intervention concluded that intervention could reduce alcohol consumption, but that the effectiveness of such interventions in daily practice remains unexplored.

This gap between efficacy and effectiveness has also been recognised by some of the pioneers of brief intervention (Heather & Wallace, 2003). The proposals to overcome this gap have, so far, focused on the search for even better screening tools and better implementation strategies for the SBI programme.

It is not uncommon in randomized control studies to find that there were changes in both the interventions group and control group at post-test. Previous researchers (McCambridge & Day,

screening provokes contemplation about drinking and makes the patient aware of his or her alcohol intake in a way that might not occur otherwise. In the first study specifically to examine the direct effects of screening, McCambridge and Day (2008) showed that being screened with AUDIT with no subsequent BI or other intervention led to reduced self-reported hazardous drinking, with the effect sizes being similar to the known effects of BIs. They argued that this was a "remarkable demonstration of the potency of alcohol screening as an intervention in its own right".

Previous studies on early and brief interventions have demonstrated a reduction in alcohol consumption and improvement in alcohol-related problems among patients with drinking problems (WHO, 1996). A 40% reduction in alcohol consumption in non-dependent problem drinkers has been demonstrated following physician advice to reduce drinking (Fleming, *et al.*, 1997).

In the current study, paired samples tests analyses found a significant reduction of the AUDIT score in both experimental (t=15.47; P<0.001) and control (t=11.28; P<0.001) groups; although the experimental group had a higher reduction than the control group. Using ANOVA, there was overall no significant intervention effect between experimental and control conditions at six months follow-up (see Table 4.1). Findings related to this study were also observed in other studies. Areesantichai, Iamsupasit, Marsden, Perngparn and Taneepanichskul (2010) did the t-test comparing the change of AUDIT score difference at baseline and after the follow-up at each intervention. After the follow-up in two communities, there was a significant difference of the total score at .001. Their findings were also consistent with the previous research findings like those of Bien, *et al.* (1993); and Moyer, *et al.* (2002) which confirmed the efficacy of brief intervention in reducing risky levels of alcohol consumption in non-dependent individuals.

5.5. CONCLUSION

Different authors maintain that if both the control and the experimental groups are similar before the intervention, and if only the experimental group receives intervention, differences after

intervention must be attributed to the intervention (Bennet, 2003). However, Kazdin (1980) argues that even groups which are similar at the beginning might become different owing to other reasons other than the effects of the intervention.

In this study, the experimental group showed a significant change in their drinking behaviour after the brief intervention. What is surprising is that even those in the control group also changed their drinking behaviour. There could be different reasons for this improvement. Firstly, since they were assessed at the primary health care clinics they could have been told about reducing their drinking by the nurses during their consultation. Secondly, since they were provided with information on cut-back leaflets they could have thought about it and changed their behaviour. Thirdly, the interaction in the community between the control group and the experimental group could also have led them to share information between the two tests.

CHAPTER 6: SUMMARY OF FINDINGS, LIMITATIONS OF THE STUDY, RECOMMENDATIONS AND CONCLUSION

6.1. INTRODUCTION

This chapter presents the aims and objectives of the study, hypotheses, summary of findings, limitations of the study, recommendations which are based on the findings of the study, as well as the concluding remarks.

6.2. SUMMARY OF FINDINGS

The main aim of the study was to evaluate the effectiveness of the Screening and Brief Intervention for risky alcohol use in the primary health care setting.

Specifically, the objectives of the study were:

- To pre-test the use of alcohol using the AUDIT;

The AUDIT questionnaire was pre-tested on two groups, the experimental group and the control group. At baseline, the AUDIT was administered to 140 participants divided into two groups of 70 each. The findings indicated that in the control group, 54.2% males and 14.1% females fell within Zone 2 category; 27.1% males and 2.8% females were in Zone 3; and 1.4% males and 0% females into Zone 4. Among the experimental group, 42.8% males and 27.1% females were found to be Zone 2 drinkers; 20% males and 4.2% females were in Zone 3; and 4.2% males and 1.4% females fell into Zone 4.

- To implement the SBI;

Brief intervention was conducted with the experimental group. Seventy participants received the intervention and the control group was provided only with the leaflet on cutting back. The results

indicated that among the control group, 54.2 % of the males and 14.1 % of the females were hazardous drinkers; 27.1% of the males and 2.8% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 42.8% of the males and 27.1% of the females were found to be hazardous drinkers, while 20% of the males and of the 4.2% females were found to be harmful drinkers, and 4.2% of the males and 1.4% of the females were possibly alcohol dependent.

- To post-test the use of alcohol six months after the intervention.

Six months after intervention, the AUDIT questionnaire was re-administered to both control and experimental groups. This was done to assess their alcohol intake after the intervention as well as to assess if the intervention done was successful. The results indicated a decrease in alcohol consumption in both groups. At baseline, all the participants were grouped in the zones, from Zone 2 to Zone 4 and at follow-up they were grouped from Zone1 to Zone 4. The results indicated that among the control group, 24.2% of the males and 14.2% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 31.4% of the males and 7.1% of the females were hazardous drinkers; 5.7% of the males and 4.2% of the females were harmful drinkers; and 1.4% of the males were possibly alcohol dependent. With regard to the experimental group, 45.7% of the males and 15.7% of the females were low risk drinkers, that is, they had a total AUDIT score of 0-7; 28.5% of the males and 4.2% of the females were found to be hazardous drinkers, while 2.8% of the males were found to be harmful drinkers and 1.4% of the females were possibly alcohol dependent.

The findings of this study show that the screening and brief intervention for alcohol risky drinking was effective as it reduced the level of drinking after the intervention. As in previous studies, it was also found that by asking people questions related to their behaviour, people changed that particular behaviour.

6.3. LIMITATIONS OF THE STUDY

The limitation was that the distance in time between the pre-test and post-test was six months and this threatened the internal validity of the study because some of the participants could not be reached to do the post-test.

There are different factors such as lack of time, fatigue, personal beliefs and other personal priorities that affect the way participants cooperate. The challenge that the researcher experienced during data collection was that the participants had to come to the primary health care clinic for other ailments and some complained that participating in this study was going to delay them. After it was explained that the questionnaire was not that long and that they would complete the questionnaires in the cubicle while waiting to see the sister, they cooperated.

6.4. RECOMMENDATIONS

The researcher recommends that, since the findings of this study indicate that the screening and brief intervention is effective in reducing alcohol consumption, the SBI be adopted as a compulsory routine screening at primary health care clinics. The compulsory screening can be adopted to help identify potential at-risk drinkers, for instance, mental health care users. The early identification of potential problem drinkers and intervention for mental health care users might help to prevent the relapse and revolving door syndrome. This is because most of the mental health care users who are in and out of the hospital also use alcohol.

In ante natal care, SBI can be done as part of the nurses' history taking. This will help reduce the risk of children born with Foetal Alcohol Syndrome. It will also help reduce maternal and infant death which is one of the millennium developmental goals.

In the care for and treatment of patients with chronic conditions, for example, diabetes and hypertension, compulsory SBI is also important because the majority of patients with chronic conditions get their treatment at the primary health care clinic instead of at private facilities. Most patients on chronic medication for diabetes and hypertension lead unhealthy lifestyles that include risky drinking while taking medication. Compulsory SBI will assist identify those who need intervention and continuous support.

Compulsory SBI is also necessary for all individuals receiving medical attention in any given setting even if it is not at the primary health care clinic, for example, in major companies where they provide health care services on-site. The compulsory SBI will help companies to identify those people who need intervention and they can provide support.

The compulsory screening can also be adopted in other settings that are not necessarily health related, for example, as part of issuing drivers' licenses and in the renewal of those licenses in order to prevent unnecessary accidents.

In trauma centres victims of sexual gender based violence (SGBV) are taken for further management. As part of a holistic approach to ensure a health body and mind, it is imperative to screen for risky alcohol use. This is basically because previous researchers and authors have indicated that alcohol misuse has many negative consequences, ranging from health risks, financial difficulties, trouble with the law, social relationships problems, and family problems.

Policy makers to make policies that will ensure that screening and brief intervention with regard to alcohol use are made compulsory in primary health care settings.

It can also be integrated in the training of all health care professionals

There is a need to get the cooperation of compulsory SBI health care professionals for SBI to be effective at primary health care level. The following implementation programme is recommended:

6.4.1. Background

Screening is done using the AUDIT questionnaire to find out about people's use of alcohol and it was developed by World Health Organization. The AUDIT can be used at primary health care clinics because primary health care is the first contact with the health system for people seeking care, and most people attend primary health care facilities at least once per year.

Many common problems seen at primary health care settings may be made worse by alcohol use. SBI provides an opportunity to educate patients about the risk of excessive alcohol use. There is evidence that the use of alcohol is prevalent throughout the world and is associated with a significant public health burden. Excessive alcohol use is also a risk factor for a wide variety of social, financial, legal and relationship problems for individuals and their families.

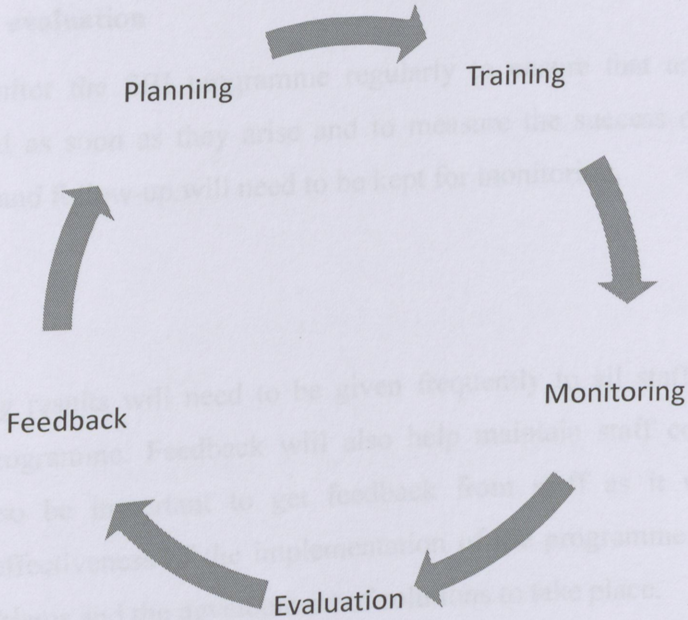

Figure 6.1: The process of implementing the SBI programme at primary health care centres

6.4.2. Planning

When implementing a programme like SBI, it is important for the staff members who are involved to understand the reasons for the programme, to feel a sense of ownership and enthusiasm for its implementation, understand their roles and be committed to making it work. There must be a coordinator for the implementation of the programme. This person will be responsible for making sure that all staff members understand their roles and responsibilities and that all the necessary tasks are carried out.

6.4.3. Training

Staff must be trained to implement the SBI programme. Effective training will enable staff members to discuss their roles and functions responsibly and also their attitudes towards screening and early intervention for harmful drinking. Training also provides opportunities for role play and supervised practice in administering AUDIT and carrying out follow-up activities.

6.4.4. Monitoring and evaluation

It is important to monitor the SBI programme regularly to ensure that any implementation problems are addressed as soon as they arise and to measure the success of the programme. Records of SBI details and follow-up will need to be kept for monitoring.

6.4.5. Feedback

Feedback of monitoring results will need to be given frequently to all staff for the on-going improvement of the programme. Feedback will also help maintain staff commitment to the programme. It will also be important to get feedback from staff as it will help provide information about the effectiveness of the implementation of the programme. This will enable the identification of problems and the development of solutions to take place.

6.5. CONCLUSION

The aims and objectives of this study were achieved. A research instrument was designed and used for both pre-test and post-test assessments. The hypothesis that was formulated and tested was supported by the study and one hypothesis was not supported.

This chapter reported the limitations that were observed. They included the drop out of some participants. Certain gaps in the research methodology were identified. These included issues related to the instrument. Four areas in which improvements can be made were listed. Recommendations based on the findings of the study were made.

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Appendix 1.

AUDIT Questionnaire

The Alcohol Use Disorders Identification Test (AUDIT): Interview Version

Dear Participant,
As part of my research I am conducting a study on the prevalence of alcohol use among patients who are coming to the clinic for consultation for any other illness. This information is important because it will assist us to tailor intervention according to your needs. To help me do this, now I would like to ask you some questions about your use of alcohol beverages during the past twelve months. Your answers to these questions will be treated in strict confidence. No details of your name will be written on this questionnaire.

Age: ___ years **Gender:** [1] Male [2] Female **Date:** ____/____/______

A standard drink is:

	*A single tot of spirits (whisky, gin & vodka) (e.g., 25ml at 43%)*		**1.1.1.1.1** A small glass of liqueur or aperitif *(e.g., 25ml at 30%)*		
	*1 can of ordinary beer (e.g., 340ml at 5%)*		*1 glass of wine (e.g., 120ml at 12%)*		*Cartoon of ordinary commercial sorghum beer (e.g., 500ml at 3%)*

1. How often do you have a drink containing alcohol in the past 12 months?
   - (0) Never [*skip to Qs 9-10*] ☐
   - (1) Monthly or less ☐
   - (2) 2 to 4 times a month ☐
   - (3) 2 to 3 times a weeks ☐
   - (4) 4 or more times a weeks ☐ [___]

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   - (0) 1or 2 ☐
   - (1) 3or 4 ☐
   - (2) 5or 6 ☐
   - (3) 7, 8, or 9 ☐
   - (4) 10 or more ☐ [___]

3. How often do you have (for men) five or more and (for women) four or more drinks on one occasion?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

Skip to question 9 and 10 if Total Score for Qs 2 and 3 is =0

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

8. How often during the last year have you been unable to remember what happened the night before because you had been drunk?
   - (0) Never ☐
   - (1) Less than monthly ☐
   - (2) Monthly ☐
   - (3) Weekly ☐
   - (4) Daily or almost daily ☐ [___]

9. Have you or someone else been injured as a result of your drinking?
   - (0) No ☐
   - (2) Yes, but not in the last year ☐
   - (4) Yes, during the last year ☐ [___]

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you to cut down?
    - (0) No ☐
    - (2) Yes, but not in the last year ☐
    - (4) Yes, during the last year ☐ [___]

Record total of specific items here [___]

Appendix 2: Consent letter and consent form

Consent letter

Dear Respondent,

I am Mpho Ramarumo from the University of Venda. I am conducting research regarding Evaluation of the screening and brief intervention for risky alcohol use in primary health care clinic in Sibasa local area in Thulamela municipality: A randomized controlled trial. You are kindly requested to participate in this study by responding to the few questions that I would like to ask you. The study is conducted for educational purposes.

Please note that participation is voluntary and you do not have to take part in this study. However, I would really appreciate it if you would share your thoughts with me. If you choose to participate you may still quit at any time, there will be no penalties and you will not be prejudiced in any way.

I will not record your name and the information you provide will remain confidential and there will be no repercussions from the answers you give. The interview will last around 10 – 15 minutes. I know that you cannot be absolutely certain about some of the answers but I ask that you be as open and honest as possible in answering these questions. Some questions may be personal in nature and I will also ask some questions that may involve thinking about and recalling the past or thinking about the future. I hope that does not make you feel too uncomfortable

Thank you.

Consent Form

Consent form

I hereby agree to participate in the research on -- --------------------------- I understand that I am participating freely and without being forced in any way to do so. I also understand that I can quit at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the interview and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to me and my community on the results of the completed research.

Signature of Respondent Date: ----------------------------

Signature of Researcher Date: ------------------------------

Telephone Number: