

**KNOWLEDGE, ATTITUDES AND PRACTICES ON NUTRITION
AMONG PREGNANT AND LACTATING WOMEN IN MOPANI
DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA**

By

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DECLARATION

I declare that the dissertation on "**KNOWLEDGE, ATTITUDES AND PRACTICES ON NUTRITION AMONG PREGNANT AND LACTATING WOMEN IN MOPANI DISTRICT OF LIMPOPO PROVINCE, SOUTH AFRICA**" is my work and that all the sources I used or quoted have been indicated and acknowledged by means of complete referencing. I proclaim that this work has not been submitted before for any other degree somewhere.



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Nemutanzhela B

17/08/2020
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Date

DEDICATION

The researcher dedicates this dissertation to God, the creator of heaven and earth who made it possible for dissertation to be a success. Dedication also go to all pregnant and lactating women who participated by sharing their information about their knowledge, attitude and practices on nutrition.

This project was mainly funded by the South African Medical Research Council (MRC) and the University of Venda Research and publication (RPC).

ABSTRACT

Background: All human beings need a balanced amount of nutrients for proper functioning of the body system as well as the ideal functioning of a vital centre (brain). Maternal under-nutrition is a leading cause of maternal mortality. Furthermore, health statuses and habits of mother's influence health statuses of newborns as well as healthy habits and mortality of children. Adequate nutrition knowledge at this stage will play a bigger role in their daily practices. However, no study has explored the nutritional knowledge, attitudes and nutrition-related practices among pregnant and lactating women in Mopani District.

Purpose: The purpose of the study was to assess and describe knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani District.

Methods: A cross-sectional study was carried out in the ten sampled local clinics in Mopani District of Limpopo province in South Africa. A self-administered questionnaire was given out to 306 pregnant and lactating women who visited ten sampled clinics for antenatal and postnatal care of which 306 were retrieved and used, representing a response rate of 100%. The Statistical Package for the Social Sciences version 25.0 was used for data entry, and descriptive statistics tests were conducted for the items which were summarized by frequencies and percentages.

Results: As many as 30.7% of pregnant women and 17.9% of lactating women reported to have never received any nutritional advice from the healthcare professionals. While the majority of the respondents 50.2% reported that their sources of information were elderly people, friends or community members. As many as 46.3% of the respondents reported to had experienced craving for unusual substances. Eating soil during pregnancy were encouraged by elderly

women of the family, since eating soil during pregnancy is often believed culturally to have an effect of providing energy to a pregnant woman.

Conclusion: The study concluded that pregnant and lactating women had some sort of lack knowledge, negative attitudes towards nutrition and sub-optimal nutritional practices.

KEY WORDS: Knowledge, Attitude, Practices, Nutrition, Pregnant women, Lactating, Women.

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LIST OF ABBREVIATIONS

| | |
|---------------|--|
| AHO | American Health Organization |
| ANC | Antenatal Care |
| FAO | Food and Agriculture Organization (of the United Nations) |
| HBM | Health Belief Model |
| HIV | Human Immunodeficiency Virus |
| MCH | Maternal and Child Health |
| PHC | Primary Health Care |
| SFH | Symphysis-fundal Height |
| SSA | Sub-Saharan Africa |
| UNICEF | United Nations International Children's Emergency Fund |
| WHO | World Health Organization |

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Breastfeeding is the most precious gift a mother can give to her infant. When there is illness or malnutrition it may be a lifesaving gift. When there is poverty it may be the only gift (Lawrence, 1991).

The United Nations (UN) has proposed good health and well-being for all as one of 17 sustainable development goals (SDGs) to facilitate global achievement by 2030. This pertains to a broader concept of health than has been used in the past, as reflection of the increased demand for health care in the international community. Despite the formulation of this goal, maternal and child health outcomes remain a major issue worldwide (WHO, 2017). Maternal and child under-nutrition including stunting, wasting, and deficiencies of essential vitamins and minerals, represents a global problem with important results for survival, incidence of acute and chronic diseases, healthy development, and economic productivity. Many women suffer from under-nutrition in developing countries irrespective of the efforts made to solve the issue. However, maternal under-nutrition should not be overlooked because it contributes to deficits in children's development and the health of child and mother (Mora and Nestel, 2017).

This study sought to assess and describe knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani District. The study specifically focused on determining the knowledge, attitudes and practices on nutrition among pregnant and lactating women. While an

emphasis was put in place that good nutritional intake supports the stamina, patience and self-confidence that the mother, infant and nursing demands helping women achieve appropriate nutritional status to optimize balanced nutrient in pregnancy as well as in breastfeeding is important and requires consideration of energy needs. Social support from family members and healthcare providers, communities, employers and policy makers are also critical to breastfeeding success. Nutrient requirements are considerably elevated during pregnancy and lactation than in any other stage of women's reproductive life. Women who are lactating should increase their energy and nutrient intakes to levels above those of non-pregnant or non-lactating women (Nagiebs, 2018). This chapter introduces and describes background, problem statement, purpose, significance as well as the conceptual framework that guides the study.

1.2 BACKGROUND OF THE STUDY

Pregnancy is considered to be a delightful experience for the expectant mother. Evidences manifested that adequate intake of nutrition is a key component for individual's health and well-being, particularly during pregnancy (Nicholson et al., 2006). It is well documented that inadequate maternal nutrition results in increased risks of short-term consequences such as; Intra Uterine Growth Restriction (IUGR), low birth weight, preterm birth, prenatal and infant mortality and morbidity. Moreover, excessive intake of nutrients during pregnancy can lead to some pregnancy complications (such as, pre-eclampsia and gestational diabetes, macrosomia, dystocia and higher prevalence of cesarean section). On the other hand, as the long run outcomes, inadequate intake of nutrients were found to have pathophysiologic or metabolic depict that will appear as disorders of child growth and development as well as adult chronic disease after a long period of quiescence (Luigi et al., 2015).

Eating well during pregnancy means do more than simply increase how much the mother eats. The mother must also consider what she eats. The ability of mother to provide nutrients and oxygen for her baby is a critical factor for fetal health and its survival. Failure in supplying the adequate amount of nutrients to meet fetal demand can lead to fetal malnutrition. The fetus responds and adapts to under nutrition but by doing so it permanently alters the structure and function of the body. Maternal over nutrition also has long-lasting and detrimental effects on the health of the offspring (Maynard et al., 2013).

Nutrition is the sum of all the processes involved in how organisms obtain nutrients, metabolize them and use them to support all life processes. Nutritional science is the investigation of how an organism is nourished and it incorporates the study of how nourishment affects personal health, population health and planetary health (Schmitz, 2012).

According to Haddad and Achadi (2014), the challenge of improving nutritional status is one of the 21st century concerns and that over the world; nearly every country experiences a level of malnutrition that leads to a serious public health risk. Approximately two to three billion people are malnourished, meaning that they experience some form of under-nutrition; they are overweight or obese, or have a micronutrient deficiency. Poor nutrition is a challenge that spoils the happiness because its consequences flow through the life cycle and reduce the generations affecting everyone especially children, adolescent girls and women. It also leads to higher mortality, cognitive impairment, infection, lower work productivity, early onset and higher risk of non-communicable diseases (NCDs), depression and stigma (Haddad & Achadi, 2014).

According to the World Health Organization (2013), poor maternal, newborn health and nutrition remain significant contributors to the burden of diseases. In 2010, 3.1 million babies died in the first 28 days of life, mostly due to low birth weight, severe infections, asphyxia and preterm birth. Every

year, 15 million babies are born prematurely, of whom 1.1 million died in the neonatal period or in infancy. In addition, many of those who survive have a lifetime disability such as learning disabilities and/or visual and hearing problems. Approximately 287 000 women died during pregnancy and childbirth in 2010, mostly due to maternal health complications. These challenges complicate approximately 2-8% of all pregnancies and have been associated with preterm and low birth weight which most of the time is as the result of insufficient nutrition (WHO, 2013).

In a study among women in India, reported that counselling on nutrition was reported by a fourth of the population. Nutrient intake showed suboptimal consumption of protein and micronutrients like iron, calcium, vitamin A, vitamin C, thiamine, zinc and vitamin B12 by more than half of the women. A high prevalence of anaemia among pregnant women (85%) and recently delivered women (97.1%) was observed. There was no difference in micronutrient intake and anaemia prevalence among the women who received ANC versus those who did not (Ghosh-Jerathe, Devasenapathy, Singh, Shankar & Zodpey, 2015).

Pregnant women in Sub-Saharan Africa (SSA) are reported to be at a risk of poor nutritional status and unfavourable outcomes because of poverty, food insecurity, sub-optimal healthcare facilities, frequent pregnancy and infections. For example, studies from Nigeria, revealed that there is widespread of both under- and over-nutrition, as well as nutrient deficiencies, including folate, iron, vitamin A and vitamin D (Lindsay, Gibney & McAuliffe, 2012). Limpopo is of no exception: pregnant women suffer from the same challenges.

According to Perumal, Cole, Ouedraogo, Sindi, Loechi, Low, Levin, Kiria and Oyunga (2013), about 979 pregnant women in the survey conducted in Western Kenya, 59% had attended ANC clinics while 39% had not. The mean nutritional knowledge was 4.6 out of 11, health knowledge was 6.2 out of 12, dietary diversity score was 4.9 out of 12, and attitude score was 7.4 out of 10.

Nutrition knowledge, attitudes, and dietary diversity score were not significantly different between ANC clinic attending and non-attending women (Perumal et al., 2013). It signifies that more efforts should be made in educating women about the importance of attending ANC.

In 2013 Mbada, Folasade, Oyinlola-Aromolaran, Faremi, Ogundele and Augustine conducted a study in Nigeria which outlined that based on knowledge and attitude on nutrition, 71.3% of women had good knowledge while 54.0% had positive attitude. Majority of the respondents (75.7%) agreed that eating healthy food is essential during pregnancy and lactation and that the health of the mother is important to herself and the baby (Mbada et al., 2013). A study conducted by Kever, Martins, Lola, Hubu, Fatima and Sambo in 2015 in Yerwa clinic of Nigeria revealed that the women had high (65.3%) knowledge of dietary practices and 63.27% of the respondents have positive attitude towards the practices. Among the factors that impede good dietary practice in the population were cultural belief and poor socio-economic background while regular attendance of ante-natal clinic and good socio-economic background enhance good dietary practice among the population (Kever et al., 2015). This means that though other women seemed well informed about dietary practices, more emphasis is required to achieve good practices to all pregnant and lactating women.

According to Maart, Rendal-Mkosi and Jackson (2008), in a study conducted in South Africa, Western Cape, pregnant women are using alcohol and cigarettes despite their awareness of the dangers to themselves and the foetus. Regarding nutrition, women have a good sense of eating in a balanced way during pregnancy but affording this on very low wages is difficult. Many ideas regarding how to increase healthy lifestyles were offered, ranging from environmental improvements, such as access to recreational facilities and handwork classes, to more contact with health services, and improvement in conditions of employment (Maart et al., 2008). Limpopo is of no exception because many areas are still stricken by poverty, therefore it becomes difficult

to other women to meet the dietary expectation during pregnancy and lactation.

1.3 PROBLEM STATEMENT

According to UNICEF, each year, more than half a million women die from causes related to pregnancy and childbirth. Nearly 4 million newborns die within 28 days of birth. Many of the 200 million women who become pregnant each year, most of them in developing countries, suffer from ongoing nutritional deficiencies repeated infections and the long-term cumulative consequences of under nutrition during their own childhood. Many women suffer from a combination of chronic energy deficiency, poor weight gain in pregnancy, anemia, and other micronutrient deficiencies, as well as infections like HIV and malaria. These along with inadequate obstetric care, contribute to high rates of maternal mortality and poor birth outcomes. Maternal under-nutrition diminishes a woman's productivity, causing repercussions for herself, her family, her community, and the broader society. Maternal malnutrition is influenced not only by lack of adequate nutrition but also influenced by factors like socio demographic factors, nutritional knowledge of women during pregnancies.

Although, researches and projects focused on maternal health are common, projects and researches focused specifically on maternal nutrition are rare in the study area. Research, program reports, and other materials specifically related to maternal nutrition principles, practices, and programs are not abundant either in the study area. Even though, maternal nutrition during pregnancy is crucial in reducing maternal mortality and infant mortality which are the target area in achieving millennium development goal number 5 and 6, no study was traceable in the Mopani District that was conducted on the assessment of knowledge, attitudes and practices on nutrition and associated factors during pregnancy. It is against this background that the

study is undertaken to best assess the knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani District of Limpopo Province, South Africa.

1.4 RATIONALE

In many countries including South Africa, women are highly involved in food production and acquisition. Household decisions, that is, in kitchen cooking and preparation of meals are influenced by women's nutritional knowledge regarding the nutritional benefits of different foods (Quisumburg et al, 2015). This means that limited knowledge among pregnant and lactating women may adversely impact the nutritional status of women.

The society is now more aware of both healthy and unhealthy diets. The choices of foods have increased due to globalization. Consumers acquire their nutrition information from different sources both authentic sources and non-authentic sources. This information systems are contradictory in nature hence is consumers. It is high time consumers provide consumers especially pregnant and lactating women with the correct information.

In South Africa, inclusion of nutrition education at maternal and child health clinics operates on the assumption that caregiver's knowledge can have an impact on women's nutritional status. However, caregivers' practices do not match up to knowledge indicating a gap between knowledge and its application (Echoka, 2011).

1.5 PURPOSE OF THE STUDY

The purpose of the study was to assess and describe the knowledge, attitude and practices on nutrition among pregnant and lactating women attending antenatal and post-natal clinics at the sampled local clinics in Mopani district of Limpopo Province, South Africa.

1.6 SIGNIFICANCE OF THE STUDY

The results of this study could add to the existing body of knowledge related to knowledge, attitudes and practices on nutrition among pregnant and lactating women therefore the finding of this study will contribute in filling the gap in understanding the knowledge on nutrition. Policy makers and Primary Health Care (PHC) can consider the results of this study to improve the existing guidelines and policies on maternal and newborn health. The results of this study may be useful to health workers to improve the overall quality of health information and care rendered to pregnant and lactating women and give improved health education to pregnant and lactating women about their nutrition during pregnancy and lactation.

Besides the health providers and the South African Ministry of Health, others who are interested in the field of maternal health in general will benefit from this study. The study could also contribute to Nursing Education; therefore, student nurses may gather information on providing health education about nutrition to pregnant and lactating women. The results of this study may be used to shape nutrition education intervention strategies targeting pregnant and lactating women due to their importance to nutrition practices in the household level. The community might benefit from the study regarding decision making during pregnancy and lactation.

1.7 RESEARCH OBJECTIVES

The objectives of the study were to:

- Explore knowledge on nutrition among pregnant and lactating women in Mopani district of Limpopo Province, South Africa.
- Describe attitudes on nutrition among and lactating women in Mopani district.
- Describe practices on nutrition among pregnant and lactating women in Mopani district.
- Provide recommendations that could add to the improvement lives of the pregnant and postnatal women and their new-born of neonates.

1.8 RESEARCH QUESTIONS

- What knowledge do pregnant and lactating women have regarding diet during pregnancy and lactation?
- What attitudes do pregnant and lactating women have regarding nutritional practices in pregnancy and lactation?
- What might be cultural practices that hinder best nutrition practices during pregnancy and lactation among women in Mopani district?

1.9 THEORETICAL FRAMEWORK

The study was guided by the Health Belief Model (HBM), which focuses on client compliance and health care practices (Polit & Beck 2015). The model attempts to justify the premise that health-seeking behavior is influenced by the individual's perceptions of threats posed by the health problem and the perceived benefits of taking actions to minimize such a health problem.

Brink and Wood (2006) support the premise that a theoretical framework attempts to explain why variables such as nutrition and pregnant women as well as postnatal women affect each other. The HBM in this study assisted in explaining why some pregnant women take action to prevent health complications during pregnancy by preparing well balance diet and carrying the instruction from ANC as well as booking for ANC early in pregnancy in order to receive health education regarding the diet in pregnancy.

The HBM also assisted in determining pregnant women and postnatal women' views about approve/proper diet during pregnancy and post-natal period.

According to Dennill, King and Swanepoel (1999), the HBM is organized into three major components which attempt to explain human behavior towards health, or in the case of this study pregnant women and postnatal women' behaviors towards early booking of ANC in order to receive well health education regarding diet in pregnancy, namely:

- Individual perceptions of pregnant women and postnatal women concerning the knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo province, South Africa.
- Modifying factors which could influence pregnant women and postnatal women' decision as to whether or not to take advice from ANC on the proper nutrition, including: Demographic factors such as age, race and gender issues Socio-demographic variables such as personality, social factors and peer influence. Structural variables related to pregnant women's' knowledge about the benefits of well-balanced diet during pregnancy and during post-natal period.
- Variables affecting the likelihood of pregnant women s' initiation of actions to utilize ANC services early for the purposes of receiving health education and early examination to detect anomalies, and the premise of the HBM is that individual pregnant women s' health beliefs are influenced by their perceptions toward proper diet during pregnancy and during lactation.

- Modifying factors such as age, gender, marital status and educational status and parity could influence the knowledge of nutrition during pregnancy and during postnatal period.
- Socio-cultural factors could also influence the pregnant women and post-natal mother's decision as to continue to follow the advice from nurses and doctors on the nutrient during pregnancy. Variables related to perceived benefits might motivate the pregnant women to the use of proper nutrition and use of to utilize ANC services.
- Perceived barriers such as the health workers' negative attitudes and the lack of accessibility, acceptability and availability of the ANC services could influence the decision not to utilize the ANC services. Access to health care is important to help modify the women s' risk behaviors and promote the utilization of ANC services (Gittins, Ganjianpour & Snyder, 2003).
- The HBM, as a conceptual framework, attempts to explore why some people who may not be ill and take certain actions to prevent illness, while others do not take such measures.
- The framework was seen as useful in identifying those pregnant adolescents who were susceptible to several inhibiting factors and unlikely to initiate early initial ANC, thereby exposing themselves and their babies to health complications that could have been prevented.
- The HBM could be used to motivate pregnant adolescents to take positive health actions through attending ANC in time and minimizing obstetric and/or health complications. Health education, counselling and effective social support systems are likely to initiate cues for action.

1.10 DEFINITION OF KEY TERMS

1.10.1 Nutrition

Nutrition is defined as relating to the process of providing or obtaining the food necessary for health and growth (Breslin, McKeown & Groves, 2016). In this study, it refers to food necessary for health and growth of pregnant and lactating women together with their babies.

1.10.2 Knowledge

Knowledge is the understanding of any given topic (Macias & Glasauer, 2014). In this study, it refers to pregnant and lactating women's understanding of nutrition, including the intellectual ability to remember and recall food and nutrition-related terminology, specific pieces of information and facts.

1.10.3 Attitudes

Attitudes are emotional, motivational, perceptive and cognitive beliefs that positively or negatively influence the behaviour or practice of an individual (Macias & Glasauer, 2014). In this study, attitudes refer to way women behave towards nutrition during pregnancy and lactation.

1.10.4 Practices

Practices are the actual application or use of an idea, belief or method, as opposed to theories relating to it (Macias & Glasauer, 2014). In this study, the term "practices" is defined as the observable actions of pregnant and lactating women that could affect their nutrition or their babies' nutrition, such as eating habit and way of feeding.

1.11 RESEARCH DESIGN AND METHODOLOGY

Burns and Grove (2015) describe research methodology as the entire strategy for a research study, starting from the identification of the research problem to the final plans of data collection. In this study, the research methodology of the study is briefly outlined. In this chapter, the detailed discussion of methodology is fully given in chapter 3 of this study.

1.11.1 Research design

The researcher used a descriptive and explorative survey design to give a detailed description of knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo Province, South Africa.

A research design is the researcher's overall plan for obtaining answers to a research question or testing research hypothesis (Burns & Grove, 2015). According to Burns and Grove (2005), a descriptive survey design may be utilized to study characteristics in a population for investigating probable solutions for a research problem. In this study, this survey helped provide data about the present and what the women are thinking or doing.

1.11.2 Population

Burns and Grove (2015) describe a population as "the entire group of persons or objects that is of interest to the researcher, which also meets the criteria which the researcher is interested in studying".

The population for this study included all pregnant and lactating women attending antenatal and postnatal and has attended the antenatal clinic in all the participated clinics in Mopani district, who signed the consent form after recruited to participate in the study.

1.11.3 Study Setting

The study was conducted at Mopani district in Limpopo province. The description and the map indicate the location of the Mopani district and all its areas are in the Limpopo province map. The participating clinics are rendering comprehensive primary health care services including maternal and child health care (antenatal care, labor and postnatal care and six weeks postnatal care services). The distance from the women's homes to clinics differ in terms of the distance, some are from far indeed and some are from near.

1.11.4 Sampling design and sample size

According to Burns and Grove (2015), a sample is “a part or fraction of a whole or subset of a larger set selected by the researcher to participate in a research study”. The sample was drawn from the larger population. A non-probability sampling design, using a convenient sampling method was used to select the sample. The sample consisted of 306 respondents.

1.11.5 Data collection

Data collection is a systematic way of gathering information relevant to the research purpose or questions (Burns & Grove, 2015). The researcher collected data from respondents after consultation to avoid the interruption of the service, using a self-administered questionnaire. A detailed structured questionnaire enables the investigator “to be consistent in asking questions and data yielded is easily analyzed” (Polit & Hungler, 2015) (described in detail in chapter 3). According to Babbie & Mouton (2016), this method is probably the best method that can be used to describe a population that is too large to be observed directly.

1.11.6 Data analysis

The SPSS Version 25.0 computer program was used to analyse the data and descriptive statistics presented by means of frequencies and percentages to

present the data. This was done with the help of a professional statistician from the University of Venda.

1.11.7 Reliability and validity

The quality of a research instrument is determined by its validity and reliability. Validity is the degree to which an instrument measures what it is supposed to measure (Brink et al.; 2011) dependability with which the instrument measures the attribute it is designed to measure. If the instrument is reliable, the results will be the same each time the test is repeated.

The researcher focused on content validity, which is the degree to which the items in an instrument adequately represent the universe of the content. The structured questionnaire was given to the clinics' professional nurses working at Mopani district areas, Supervisors of the study and to the staff with research experience to determine whether the items in the questionnaire were relevant and suitable to describe knowledge, attitudes and practices on nutrition among pregnant and lactating women.

A pre-test, which is a smaller review, was carried out to obtain information to improve the questionnaire and to assess the feasibility of the study. The respondents in the pre-test were like those in the study and it was done under similar settings, but they were not included in the final study. Conducting a pre-test assisted the investigator to identify problems with the questionnaire. It also gave an estimate of the time to interview everyone, which was important in obtaining consent for the participation (Polit & Hungler, 2015). During pre-test, the researcher allocated 30 minutes for the completion of the questionnaire but it was finished before the respondents complete the research tool therefore, the researcher extended the time to 45 minutes. The questionnaire was then assessed for its clarity, length and completeness.

Some skip patterns were then corrected; questions difficult to be answered were rephrased.

1.11.8 Ethical considerations

Pera and Van Tonder and Van Rensburg (2015) define ethics as “a code of behavior considered correct”. The following ethical principles were considered in this study: permission to conduct the study, respect for persons’ human dignity, confidentiality and anonymity, avoiding harm, justice, freedom of exploitation and informed consent (see chapter 3). Ethical clearance was obtained from the University of Venda, as well as from the Provincial Department of Health, as demonstrated by the clearance certificate and the approval letter granted by the Department of Health. In addition, the researcher also sought approval from Operational Managers to carry out the research in the sampled local clinics. The nature of the study was fully explained to the study respondents to obtain their informed consent prior to participation in the study and data was kept confidential.

1.12 LIMITATIONS OF THE STUDY

Limitations applicable to this study will be discussed in chapter 5.

1.13 OUTLINE OF THE STUDY

This study consists of five chapters:

Chapter 1: The researcher introduced the research topic, gave a background of the research problem and described statement, aims, objectives, definitions

of key terms, research methodology, validity and reliability of the study, ethical considerations and significance the study.

Chapter 2: Literature review. This chapter gives an in-depth review of the literature related to the topic under study.

Chapter 3: Research design and methodology: This chapter outlines the research methodology focusing on the research design, population, sampling, data collection, data analysis procedures and ethical considerations for this research were explained.

Chapter 4: Data presentation, analysis and interpretation: This chapter presents the results of the study, interprets them according to the set objectives of the study and discusses them in relation to findings from other researchers.

Chapter 5: Conclusions and recommendations: This chapter reports the conclusions of the study in relation to the set objectives, outlines limitations and makes recommendations based on the findings of the research.

1.14 SUMMARY

Chapter 1 presented the background of the study, problem statement, purpose of the study, significance of the study, research objectives, research questions, definition of key concepts and research methodology. The next chapter presents the literature review for the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter presented the background, problem statement, purpose, significance, objectives, research questions, definition of key concepts and methodology. This chapter focuses on the review of relevant literature to knowledge, attitudes and practices on nutrition among pregnant women and lactating women.

Literature review is an interpretive, organized and written presentations of what the author has read (Aveyard et al., 2014) and this may include textbooks, journal, articles, theses, dissertations and reports from professional organizations (Gray et al., 2017). The researcher in this study focused mainly on describing relevant literature to the study to cover the three objectives, which is comprised of theoretical and empirical literature. Theoretical literature includes the model in which this study was based; meanwhile empirical literature consists of the knowledge of study topic derived from research. The rationale of reviewing literature was to understand clearly a comprehensive picture and meaning to therefore develop guidelines to facilitate supervision in the clinical areas. Furthermore, the findings of this study can be compared and combined with existing literature (Gray et al., 2017).

The literature review on knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district assisted the

researcher to formulate appropriate research objectives and gain further an insight into the problem and the chapter examined literature review on:

- Conceptual framework
- Sources of nutrition information
- Relevant information about micronutrients during pregnancy and lactation
- Nutritional knowledge and food choices
- Nutrition attitude
- Dietary practices
- Gap in knowledge

2.2 THEORETICAL FRAMEWORK

Conceptual framework/model provides a broad understanding of the phenomena of interest, the assumptions and the philosophical views of the model's designer (Polit & Beck 2015). The phenomenon under study is the knowledge, attitudes and practices of pregnant and lactating women on nutrition pregnant adolescents' utilization of ANC services. The HBM is used to guide the study. The literature review will be discussed in line with the research questions which are associated with the HBM. Demographic variables could contribute to poor nutrition, cultural practices regarding dirt during pregnancy as well as non-utilization or non-utilization of ANC services. The factors discussed in this study are age, gender inequalities, marital status, educational level and parity. Pregnancy, poor nutritional status of a pregnant women, inadequate ANC and childbirth are the leading causes of maternal mortality and morbidity among women aged 19 and younger.

Theoretical framework is defined as "the abstract logical structure of meaning that guides the development of the study and enables the researcher to link the findings to the body of knowledge that constitutes nursing science and/or health science". The framework guides the study and gives it its structure as perceived by (Brink & Wood, 2014).

This study was guided by the Health Belief Model (HBM), which focuses on person's compliance and health care practices (Brink & Wood, 2014). The model attempts to justify the evidence that health-seeking behavior is influenced by the individual's perceptions of threats posed by the health problem and the perceived benefits of taking actions to minimize such a health problem. Brink and Wood (2014) support the evidence that a theoretical framework attempts to explain why variables such as seeking for nutritional advice during antenatal care and postnatal visits among some of the pregnant and lactating women were not done, and such practices affect women.

According to Chan et al (2016), concern over health behavior and a health seeking behavior developed in the early 1950s when low levels of public participation in preventive health programs were observed in the USA, despite the services being provided free of charge or at low cost. Behavioral scientists and health workers wished to know why and under what circumstances people acted to prevent, detect and treat diseases. Just as in pregnancy, women should seek for nutritional advice during antenatal care and postnatal visits.

The HBM explains health-related behavior at the level of individual decision-making (Mikhail, 2014). Women should seek for health service to maintain their health. Antenatal care for pregnant women, postnatal for lactating women is important in the fact that early compliance to nutrition can be enhanced. This is the same with Reproductive Health Services (RHS) are

available around South Africa, including Mopani district of Limpopo province where the study focused. At these clinics, nutritional advises during ANC and postnatal are provided free of charge, which should enable all women to use these services should they wish to do so.

2.2.1 An overview of the Health Belief Model (HBM)

The HBM was identified as the theoretical framework for this study, as the reduction of insufficient knowledge and poor practices on nutrition among women maybe increased through health seeking behavior. This could be done by means of visitation for nutritional advice during ANC and postnatal. Health seeking behavior to prevent complications reflects the health belief system of the individual woman and the society at large. Nutritional advice will therefore aid women to face challenges equipped during pregnancy and lactation.

The HBM in this study assisted in explaining why some pregnant and lactating women act to prevent health complications during pregnancy and lactation by visiting ANC and postnatal for nutritional advice, while others did not even visit at all.

The HBM also assisted in describing pregnant and lactating women's view about ANC and postnatal visits for nutritional advice and what factors influence the utilization of ANC and postnatal services. According to De Vos et al., 2014, the HBM is organized into three major components which attempt to explain human behavior towards health namely:

- Individual perceptions of pregnant and lactating women concerning the utilization of ANC and postnatal services.
- Modifying factors which could influence pregnant and lactating women's decision as to whether to visit ANC and postnatal for nutritional advice or not, including: Demographic factors such as age, race and gender. Socio-demographic variables such as personality,

social factors, and structural variables related to pregnant and lactating women on knowledge about the benefits of visiting healthcare professionals for nutritional advice and dangers of not doing so.

- Variables affecting the likelihood of pregnant and lactating women's initiation of actions to visit healthcare professionals for nutritional advice during ANC and postnatal.

Six components of the HBM were used in the study: perceived susceptibility, perceived benefits, perceived barriers, perceived cost, efficacy, and cues to action (Silal et al, 2015).

Figure 1.1 Components of the HBM

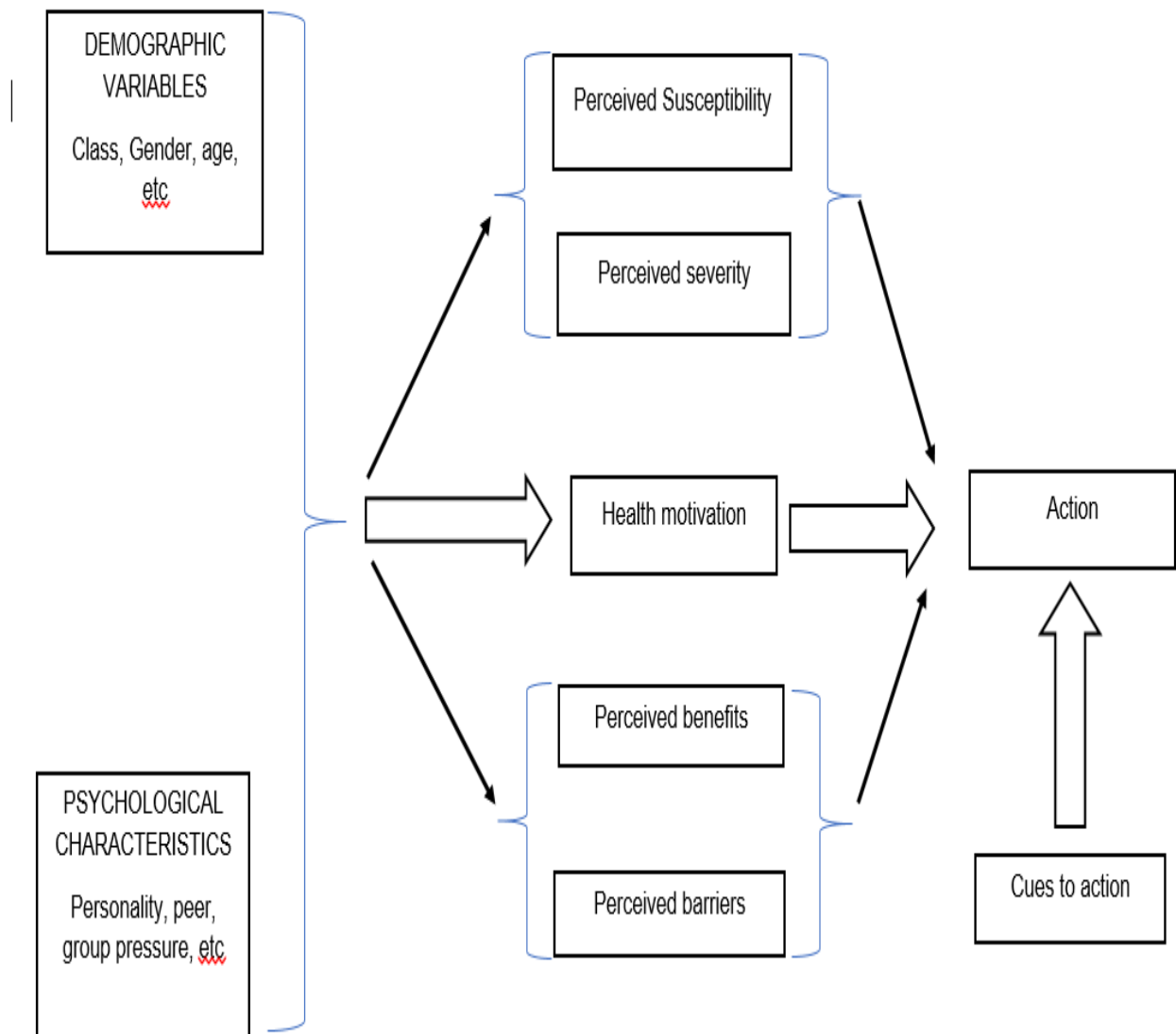


Figure 1.1 Adapted from (Conner, 2014)

2.2.1.1 Perceived susceptibility

Galvan (2016) define perceived susceptibility as the "individual's perception of the degree of his/her susceptibility to a health condition". It was found that 86% antenatal coverage was reported in urban areas whilst 67% in rural areas. This could indicate that the women from rural area did not perceive themselves susceptible to any health complications like those in urban areas.

2.2.1.2 Perceived severity

Perceived severity is the degree of concern at the thought of disease or problems associated with pregnancy and lactation among some women. Aveyard, (2014) found that subjective norm variables were more analytical of behavioral intentions than defiance factors, such as the value of discussing challenges of women with medical conditions (high-risk) which modify their nutritional lifestyle.

2.2.1.3 Perceived threat

Perceived threat depends on two beliefs: perceived susceptibility to illness or health breakdown and anticipated severity of the consequences of such illness (Conner, 2014). In this study, the implications of high-risk pregnancies and postnatal, complication on the health of the women should be perceived as serious threats to the women and their families. Hacker (2015) states that perceived threats to health actions include phobic reactions, physical and psychological barriers, accessibility factors and even personality characteristics. Clarke, (2014) as well as Say et al., (2015) maintain that perceived threats include those related to the continuity of preventive action taken daily such as visiting ANC and postnatal for nutritional advice during pregnancy and lactation.

2.2.1.4 Perceived benefits and perceived barriers

Perceived benefits and perceived barriers on behavioral practices among pregnant and lactating women are to continue attending ANC and postnatal clinics for nutritional advice during pregnancy and lactation despite of cultural taboos. Perceived benefits of actions: “The decision to obtain care for women with health complications is determined by recognition of danger signs, perceived severity of illness, perceived signs and available quality of interventions. The perception of a condition as normal or minor interacts with the possible overall cost of treatment and level of awareness of illness severity” (Galvan, 2016). Women who might perceive the modification of lifestyle on

nutrition during pregnancy and lactation are more likely to be those who are young, pregnant or lactating for the first time.

Perceived quality of care, which partly has connection with medical quality of care, is an important factor influencing the utilization of health care services. Assessment of the quality of services: "largely depends on individuals' own experiences with the health system and those of people they know" (Moore, 2014).

2.2.1.5 Perceived barriers to using ANC and postnatal clinics

Perceived barriers are "possible blocks or hindrances to engage in preventive behaviors, including such factors as cost, inconvenience and unpleasantness" (Chan et al., 2016) and Mikhail (2014) state that perceived barriers to health actions include such items as phobic reactions, physical as well as psychological barriers, accessibility factors and personality characteristics. Monetary cost of transport to antenatal and postnatal clinics might also contribute to the unavailability of some women because of the distances from where the women reside. Muhammad, Nazia, Saira, Waseem and Farman (2017) found that women and their husband's income, type of profession and women self-sufficiency are the major determinants of maternal health seeking behavior.

2.2.1.6 Perceived cost

The fifth component of the HBM is perceived cost. Muhammad, Nazia, Saira, Waseem and Farman (2017) found that women and their husband's income, type of profession and women self-sufficiency are the major determinants of maternal health seeking behavior. Cost consequences might hinder health seeking behaviors and best practices and health services.

2.2.1.7 Efficacy

Efficacy means that the "effectiveness of a health services procedures such as ANC and postnatal services in preventing complications that might occur during pregnancy and lactation is the standard measure against which other care system like cultural nutritional practices in areas where they are still culturally anticipated to live (Chan, 2014). There are two measures of efficacy, namely method effectiveness and user effectiveness. According to Polit and Beck, (2015), method effectiveness is the protection a woman receives when a method is used correctly, while user effectiveness is the success of a method in preventing complications during pregnancy and lactation.

2.2.1.8 Modifying factors

Factors that could modify women's choices of visiting healthcare professionals for nutritional advise during ANC and postnatal to prevent any complications include demographic, socio-psychological and structural variables.

2.2.1.9 Personality factors

Personality factors can be positively or negatively associated with the practice of health behaviors (Murray, 2015).

2.2.2 Conclusion

The adequate nutrition of any pregnant and lactating women is an aim to achieve healthy outcomes during pregnancy and lactation. The idea of understanding health behavior of women about nutrition intake is being crucial in nowadays. It is because of inadequate nutrition created many problems for women such as anemia, lack of oxygen during delivering baby, low birth weight of baby and mother die during delivery. This study proposes the Health Belief Model (HBM) trying to explain and predict pregnant and lactating women's behavior. The model clearly enlightens about individual perception, modifying factors and likelihood of pregnant and lactating women's behavior. Thus, this study may give some evidences for Mopani

District as recommendation to motivate nutrition intake of pregnant and lactating women. Moreover, a nutrition education program is another suggestion to provide knowledge of food and nutrition in order to increase awareness about healthy food for pregnant and lactating women.

2.3 SOURCES OF NUTRITION INFORMATION

The main source of nutrition information among pregnant and lactating women is the Maternal and Child health (MCH) clinics. Other sources include the ANC clinics during pregnancy, lactation, school curriculum depending on their education levels, radio, television, grandparents, friends, relatives, newspapers and nutrition awareness campaigns.

2.4 RELEVANT INFORMATION ABOUT MICRONUTRIENTS DURING PREGNANCY AND LACTATION

Micronutrients include minerals and vitamins which are required for the growth and well-being of the person and are required in small quantities to ensure normal metabolism. There is the complexity of metabolism during pregnancy and interactions between micronutrients and overall requirements of nutrients during pregnancy are increased because of metabolic demands and the increase of the mother body tissue reserves and for the development of the placenta and the foetus. The requirements of many micronutrients increase during pregnancy but not necessarily all micronutrients and these requirements depend on the present nutritional status of the woman, the rate of weight gain during pregnancy, the availability of nutrients or diseases existing in the same area (Darnton-Hill & Mkpura, 2015). These items ought to be the primary focus of the diet of pregnant women as they provide the key

nutrients necessary during pregnancy: iron & folic acid, iodine, calcium, vitamin D, and omega-3 fatty acids.

2.4.1 Iron and folic acid supplementation in pregnant women

According to WHO (2012), folic acid is an essential B vitamin required early in pregnancy for proper development of the baby's spinal cord in the first 28 days of pregnancy, to synthesize, repair, and add deoxyribonucleic acid (DNA). Folic acid is especially important in aiding rapid cell division and growth during infancy and pregnancy whereas iron is an essential mineral necessary for the transportation of oxygen via haemoglobin in red blood cells and for oxidation by cells and it is estimated that 41.8 % of pregnant women around the world are anaemic and at least half of this anaemia cases are assumed to be due to iron deficiency. Iron can be found in food like eggs, meat, poultry, cereals and vegetables.

Iron supplementation has a significant benefit in reducing anaemia and iron deficiency. Iron in combination with folic acid also has a beneficial impact on anaemia at term and should be routinely used in pregnant women at least in developing countries to reduce the incidence of anaemia due to increased demands during pregnancy (Yakoob & Bhutta, 2011). It simply means that both iron and folic acid when used by pregnant women can be of benefit to their health and the health of the foetus. For this reason, the WHO recommendation for areas where anaemia is prevalent is that all pregnant women receive supplements of iron and folic acid to prevent anaemia and its maternal and perinatal complications such as Spina Bifida and Hydrocephalus.

A study conducted at Khartoum Hospital, Sudan and revealed that out of 856 women, 788 (92.1%) used iron-folic acid supplementation during pregnancy and 65.4% used folic acid. While place of residence, occupation and level of education were not associated with iron-folic acid usage, older age and use of

antenatal care were associated with iron-folic acid use. Primiparity, maternal employment and use of antenatal care were the factors associated with folic acid. Using iron-folic acid was protective against anaemia and LBW infants. There was a high rate of iron-folic acid supplementation use among pregnant women in Khartoum, Sudan, which was beneficial in preventing anaemia in expectant women and infants of LBW (Abdullahi et al, 2014). WHO (2012) outlined a strong recommendation stating that daily oral iron and folic acid supplementation is recommended as part of the antenatal care to reduce the risk of low birth weight, iron deficiency and maternal anaemia:

Table 1.1 Pregnant women’s daily iron and folic acid supplement (WHO, 2012)

| | |
|------------------------|---|
| Supplement composition | Iron: 30–60 mg of elemental iron Folic acid: 400 µg (0.4 mg) |
| Frequency | One supplement daily |
| Duration | Throughout pregnancy. Iron and folic acid supplementation should begin as early as possible |
| Target group | All pregnant adolescents and adult women |
| Settings | All settings |

2.4.2 Iodine supplementation in pregnant women

Iodine is a vital element to produce thyroid hormone. There is approximately 50% of Iodine increase requirement during pregnancy to meet the higher demands caused by the increased production of thyroid hormones, foetal need of iodine supply from the mother and increased renal excretion of iodine due to physiology of pregnancy. Iodine is essential for healthy brain development in the foetus and young child. To ensure that every woman has enough intake of iodine, WHO and UNICEF recommend universal salt iodization as a global strategy (WHO & UNICEF, 2007). According to Zimmermann (2012), in

moderate to severely iodine deficient areas; the study demonstrated that iodine supplementation before or during early pregnancy eliminates new cases of cretinism, increases birth weight, reduces rates of perinatal and infant mortality and generally increases developmental scores in young children by 10 to 20%. Mild maternal iodine deficiency can cause thyroid dysfunction but whether it impairs cognitive and/or neurologic function in the offspring remains uncertain. It was estimated that iodine-deficient populations experience a mean reduction in intellectual quantity of 12 to 13.5 points. In nearly all regions affected by iodine deficiency, salt iodization is the most cost-effective way of delivering iodine and improving maternal and infant health.

Table 1.2: WHO recommended dosages of daily and annual iodine supplementation (WHO & UNICEF, 2007).

| Population Group | Daily dose of iodine supplement ($\mu\text{g}/\text{d}$) | Single annual dose of iodized oil supplement (mg/y) |
|---|--|---|
| Pregnant women | 250 | 400 |
| Lactating women | 250 | 400 |
| Women of reproductive age (15-49 years) | 150 | 400 |
| Children < 2 years | 90 | 200 |

It is estimated that over 1.8 billion people worldwide have an insufficient iodine intake, putting them at risk of iodine deficiency (Andersson, 2012). Europe is the region with the highest proportion of individuals with insufficient intake (44%) of iodine, whereas South East Asia has the highest number (540million) of iodine intake. Given the elevated iodine requirements during pregnancy and breastfeeding and the importance of thyroid hormones for growth and development of the nervous system, ensuring adequate status in women and young children is critical. However, as only a limited number of countries have completed surveys in pregnant women and women of reproductive age on national or large sub-national levels, there are insufficient

data to directly estimate the regional or global prevalence of low iodine intake in these important target groups (Wong, 2011).

2.4.3 Calcium supplementation in pregnant women

Various studies have suggested that calcium supplementation during pregnancy has a beneficial effect on reducing the risk of pregnancy-induced hypertension. The results of trials evaluating the effect of supplementation on maternal bone mineral density, foetal mineralization, and preterm birth are however less conclusive. Excessive consumption of calcium may increase the risk of urinary stones and urinary tract infection and reduce the absorption of other essential micronutrients (WHO, 2013).

WHO 2013 concurred with Hacker, Fung and King (2012) reporting that it has been frequently reported that women of childbearing age do not consume the dietary reference intake for calcium? Women who chronically consume suboptimal amounts of calcium (<500 mg/day) may be at risk for increased bone loss during pregnancy. Women who begin pregnancy with adequate intake may not need additional calcium, but women with suboptimal intakes (<500 mg) may need additional amounts to meet both maternal and fetal bone requirements.

Table 1.3: Scheme for calcium supplementation in pregnant women (WHO, 2012).

| | |
|--------------|---|
| Dosage | 1.5–2.0 g elemental calcium/day |
| Frequency | Daily |
| Duration | Supplementation may start at week 20 onward |
| Target group | All pregnant women, particularly those at higher risk of hypertension |
| Settings | Areas with low calcium intake |

2.4.4 Micronutrients during lactation

During lactation, there is increased need for micronutrient requirements.

Table 4 reveals the daily requirements for nutrients:

Table 1.4: Daily micronutrient requirements for lactating women (FAO/WHO, 2007).

| NUTRIENT | DAILY REQUIREMENT |
|-------------|-------------------|
| Vitamin A | 850 µg. RE |
| Vitamin D | 5µg |
| Vitamin E | 12mg α -TE |
| Vitamin K | 55µg |
| Vitamin C | 95mg |
| Niacin | 17mg |
| Folate | 500µg |
| Calcium | 1000mg |
| Phosphorous | 1200mg |
| Magnesium | 355mg |
| Iron | 15mg |
| Zinc | 19mg |
| Iodine | 200µg |
| Selenium | 42µg |

2.5 NUTRITION KNOWLEDGE AND FOOD CHOICES

Nutrition knowledge has been shown to play an important role in influencing healthy food habits which ensure nutrient needs throughout lifecycle are met adequately since individual needs are determined by rate of growth. When an individual is aware how to meet these nutritional needs, this facilitates food choices that enhance health and wellness by preventing excess or less intake of nutrients that could be associated with ill health (Worsely, 2002).

To secure societal health, nutrition security is an important factor to consider and means more than having adequate access to quality food and in adequate amounts but also encompasses the need for people to understand how to utilize a healthy diet for greater benefits to their health.

Therefore, nutrition education in community focus on food behavior patterns by increasing knowledge on food value to improve dietary practices and consequently to enhance nutrition status of an individual (FAO, 2007).

Nutrition education in communities is achieved through continuous extensive awareness efforts to promote changes such as dietary diversification. This becomes important since societies are experiencing shifts in dietary habits due to nutrition transition. Informal sources such as community traditional structures are facing challenge from social marketing which continue to be used widely. Other sources currently being used are print and electronic media peer as well as formal set ups through school curricula. The current upsurge of nutrition information has made society more food conscious (Vijayaraghavan, 2004).

Food choices continue to be influenced by wide range of factors such as advertising through social marketing, economic status and environmental

concerns. The need to enhance consumer knowledge is being reflected in the changing lifestyle particularly in urban areas as more people continue to increasingly eat away from home. There is increased demand for food and markets on the other hand have responded to demand for foods by providing fast and convenient foods. This has also increased processed and imported foods which have continued to replace fresh and culturally accepted foods. Therefore, food markets and choices are becoming complex and overcrowded. Therefore, much attention should be given in enhancing right information and clear labeling of products to address concerns by consumers on intake of adequate nutrients and healthy choices (Kinyua, 2013).

2.6 NUTRITION ATTITUDE

Attitude has been described as a psychological determinant in food choice and consumption among other determinants such as physiological and nutritional needs. Attitude causes experience of emotions or may involve intellectual activities such as reasoning and purposive behavior. Some of the known attitudes associated with food are seen when food choices are triggered by external factors like sight rather than internal cues like hunger, dietary restraint or health and availability of novel foods. Unhealthy foods that are attractively packaged are likely to attract more purchase and health factors may not be a consideration in their choices rather the aesthetic value (Cox and Anderson, 2004).

Attitude towards food greatly influence nutrition efforts and dietary choices that people make and can be related to observed dietary patterns particularly when based on factors such as aesthetic values of food or scientific benefits of food to an individual. These factors aim to influence intention of an individual towards consumption of certain foods. Firm attitude towards healthy dietary practices acquired through nutrition knowledge are likely to

exhibit positive healthy behavior over long term. Healthy outcome will result when positive attitudes strongly influence beliefs about consequences of action taken in food choices. Therefore, positive attitude shaped by the benefits such as health may produce better practices. Some of the practices like eating regular meals and keeping weight under control have been identified to have positive effect on one's age. Positive attitude toward healthy food choices have been shown to be influenced by nature of environment (Kinyua, 2013).

2.7 DIETARY PRACTICES

Good dietary practices contribute to a healthy lifestyle. When a higher proportion a higher proportion of the frequently consumed foods consist mainly of cereals and legumes and less of animal products, vegetables and fruits nutrient imbalance can cause micronutrient deficiencies. Poor diet combinations synergized by risk factors such as inactivity can easily result to poor health. Current shifts in diets have been observed where more energy carbonated soft drinks together with refined grain products containing high fat and sugar are being increasingly consumed with less consumption of whole grain products and fresh fruits and vegetables (Schiff, 2009).

Several studies have shown that metabolic disturbances early in life, particularly those related to nutrition, induce irreversible physiologic alterations in childhood. Experimental and epidemiologic studies have pointed out that nutrition is vitally important during prenatal (pregnancy) and postnatal (immediately after birth) periods. Therefore, nutrition of the lactating woman not only affects milk composition and production but also the health of the offspring in adulthood. For example, a study in Silveira and co-workers (in 2007) showed that fatty acids in maternal milk lead to cardiac insulin resistance in the adult offspring. Hence, fatty acids consumption by

lactating mother is an important factor for the induction of long-term metabolic disorders in the adult offspring, especially those related to insulin (Ongosi, 2010).

2.7.1 Cultural practices (Beliefs and Taboos).

Strong cultural practices and food taboos in India are associated with maternal nutrition. All study groups mentioned specific foods with beneficial and/or adverse effects on either the mother or her child. Strong cultural practices preventing pregnant women from eating adequately were described, especially among women living in large multi-generational homes. All women mentioned a form of restrictive diet following delivery for the woman's body to recover and prevent post-delivery complications (Piasecki, 2007).

Nwafor (2008) conducted a study in South Africa where a total of 273 pregnant women participated in the study, of which 85% eat soil. Most women believed that soil eating gives energy, taste nice, makes women feel strong, and makes stomach feel full. The other reason given by these women is that soil eating protects unborn baby from poison, gives nutrients to unborn baby, prevent prolonged labour, stops morning sickness.

According Kindred (2013) several cultural beliefs and taboos were in place surrounding food intake during pregnancy in the community. Most prominent taboo is the belief that cutting food during an eclipse can cause their baby to be born with a cleft lip or deformed futures/limbs. Women also believe that breaking an egg shell while pregnant can cause their amniotic sack to break early during labor and that the amniotic fluid may splash their midwife's face, which is embarrassing and socially unacceptable. Healthy foods (milk, egg and banana) can cause their baby to have light 'beautiful' skin, while consuming rice can cause their baby to have dark 'ugly' skin. Cold food can make the delivery difficult/painful while hot food (especially milk) can make it easy (Kindred, 2013).

The strength of beliefs in traditional food customs and taboos varied significantly between regions. There are cultural norms and taboos that influence the diet of a pregnant woman in many rural parts of the community. The common foods forbidden for pregnant women are foods rich in protein. It is believed that because protein helps the body to grow, if a woman consumes a lot of protein in her pregnancy, then the baby will grow too big leading to complications during the labour. Many people believe that if a pregnant mother breaks the taboos and eats forbidden food, she would either encounter difficulties during labour, or her infant would be abnormal, or would have congenital abnormalities, or the baby would be very small (Kumza, Paofa, Kaugla, Catherina, Samiak & Kumei, 2013)

2.8 GAP IN KNOWLEDGE

Although a research had been done on knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani District, its focus was more on dietary intake of pregnant and lactating women, their level of knowledge on nutritional requirements of pregnant and lactating women and the relationship of this knowledge and their daily nutritional practices. This research study described the level of knowledge of pregnant and lactating women, attitudes and nutrition-related practices in relation to their roles as household decision makers on dietary intake. Furthermore, the study generated data on the same from a rural community set up as opposed to an urban area. Such a study had never been conducted in the study area.

2.9 SUMMARY

This chapter reviewed literature related to knowledge, attitudes and practices on nutrition among pregnant and lactating women and discussed the theoretical framework (HBM) used in the study. Chapter 3 deals with the research methodology used in the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Previous chapter reviewed relevant literature related to knowledge, attitudes and practices on nutrition among pregnant and lactating women. This chapter presents the research design and methods used in the study including study setting, research population, sampling, recruitment of the respondents, research tool, data collection, reliability and validity, data analysis, pre-test study and ethical considerations.

Research methodology is defined as the technique used to collect and analyse the data (Pilot & Beck, 2005). While Burns and Grove (2014) emphasising that the methodology of research project strongly influences the research process because it defines the method of carrying out the research and presenting the methods for data collection and measurement as well as the techniques used for data analysis.

3.2 DESIGN OF THE STUDY

According to Burns and Grove (2015), the design of a study is the end result of a series of decisions made by the researcher concerning how the study will be conducted. The design is closely associated with the theoretical framework of the study and guides planning for implementing the study.

A quantitative, descriptive and explorative research design was chosen for this study in order to give a detailed description of knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district. Quantitative research is a formal, objective and systematic process for generating information about the world. The specific questions addressed may generate knowledge, which could directly improve the utilization of the clinics (Burns & Grove, 2015). According to Brink (2014), a descriptive survey design may be utilized “to study characteristics in a population for the purpose of investigating probable solutions of a research problem”.

The study was chosen for the following reasons:

- It is appropriate for the research objectives of this study as the aim of the study was not to interpret cause and effect but to describe the nature of the research in the topic (Brink et al., 2014).
- It provides data about the present and tells what people are thinking, anticipating, planning and doing.
- It is useful for gaining new insight, finding new methods and pointing out the typical or average response (Brink et al., 2014).
- There is no active intervention on the part of the investigator that may produce researcher bias (Brink et al., 2014).

According to Burns and Grove (2015), a survey design may be utilized to study characteristics in a population to investigate probable solutions of a research problem. In this study, the survey design was used to investigate knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district. It is unbiased; there is no prejudice in the selection of units participating in the research. The research data can be collected in the natural setting and in a short time, using an administered questionnaire (Brink, 2014). In this study, the setting was Mopani district.

Ten sampled local clinics were used to conduct the study. A prepared private room was used in the clinics to promote privacy for the patient. Data was collected using a self-administered questionnaire.

3.2.1 Study setting

The study conducted in Mopani district which covers a geographical area of 20 011 square kilometres with the population of 1,092,507 and is a Category C municipality located within the north-eastern quadrant of Limpopo Province. It consists of five local municipalities: Ba-Phalaborwa, Greater Giyani, Greater Letaba, Greater Tzaneen and Maruleng. It is bordered in the east by Mozambique, in the north by Zimbabwe and Vhembe district Municipality, in the south by the Mpumalanga province through Ehlanzeni district Municipality, in the west by Capricorn and Vhembe district Municipality, and in the south-west by Sekhukhune district Municipality (Statistics South Africa, 2013).

According to Mopani Draft Integrated Development Plan (2014), Mopani is currently exporting agricultural products such as tomatoes, mining products such as copper and also cultural artifacts. There is a smaller percentage of economically active population in Ba-Phalaborwa with only 48.2% of the population economically active though mining industry provided many job opportunities. The total number of clinics at Ba-Phalaborwa is 10. The population of people in Ba-Phalaborwa is 127307 and 12731 number of people are served by each clinic. The total number of pregnant and lactating women visiting clinics daily average is 1300 (Matlou et al., 2014).

Figure 1.2 Map of Mopani district.



Figure 1.2 Adapted from STATA SA (2012).

3.2.2 Quantitative research

According to Burns and Grove (2015), quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world. This research method is used to describe variables, examine relationships among variables, and determine the cause and effect of interactions between variables.

The research was quantitative because the data collected from this study was analyzed in quantitative form. Quantitative analysis involves the “manipulation of numerical data through statistical procedures for the purpose of describing phenomena or assessing the magnitudes and reliability of relationships among them” (Burns & Grove, 2015).

Quantitative research uses structured tools to generate numerical data and uses statistics to interpret, organize and represent the collected data (Burns & Grove, 2015). In this study, the research approach was quantitative as the researcher used a structured questionnaire to collect data from the respondents. This method allowed the researcher to ask all the respondents the same questions with predetermined responses, which allowed objective data to be collected throughout the study. The researcher also used frequency tables and graphs to analyze and interpret the results.

3.2.3 Descriptive design

Burns and Grove (2015) define a descriptive design as a method to gain more information about variables within a particular field of study. The design is used to identify a phenomenon of interest, identify variables within the phenomenon and develop conceptual and operational definitions of variables in the study (Burns & Grove, 2015). Descriptive studies provide valuable baseline information. The method is also flexible and can be used to collect information from a large group of respondents (Polit & Beck, 2015).

With the descriptive design the researcher plans either to assemble new information about an unstudied phenomenon or to gain more information about characteristics of individual situations, or groups, and the frequency within a particular field of study (Burns & Grove, 2015). In this study, the descriptive design was used to describe and investigate the nature of the phenomenon of knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district.

3.3 TARGET POPULATION

Burns and Grove (2015) defined population as the entire aggregate of cases that meet a designated set of criteria. In this study the population was pregnant and lactating women attending ANC and postnatal at sampled local clinics in Mopani district, respondents might be consulting for their ANC or postnatal visits.

3.3.1 Inclusion criteria

According to Brink et al (2014), inclusion criteria are the characteristics that those people in a sample should possess.

The inclusion criteria for the study were pregnant and lactating women who:

- Resided in any area under Mopani district because that is where the study is based and focused.
- Attending ANC and postnatal at Mopani sampled local clinics.
- Should be pregnant or lactating at the time of data collection because the study requires relevant and current information.

- Those who were willing to participate in this study voluntarily because no one can be forced to participate unwillingly.
- Should be able to understand or talk using any language of South Africa.

3.3.2 Exclusion criteria

Brink et al (2014) described exclusion criteria as characteristics, which a participant may possess, that could adversely affect the accuracy of the results.

- Pregnant and lactating women who did not booked for ANC in Mopani district.
- Not residing at the area of Mopani district.
- Did not attend ANC at Mopani district because they form a statistical point of another area and are not within range of the study.
- Attended ANC at Mopani district but no longer living at Mopani district because they form a statistical point of another area and are not within range of the study.
- Women who consulted the sampled local clinics but not pregnant or lactating because they don't fall within the focus of the study.
- Women who with mental illness since their information cannot be trusted.

3.4 SAMPLING DESIGN AND PROCEDURES

According to Burns and Grove (2015), sampling involves selecting a group of people, events, behavior, or other elements with which to conduct a study. Burns and Grove (2015) describe a sample as subset of the population that represents the entire population in order to obtain information regarding the phenomenon. The samples represent the population. A sample is a subsection of the population, which is selected to participate in a study. The selected sample should therefore have similar characteristics of the population under study to allow generalizability of the results to represent the population (Polit & Beck, 2015).

There are two methods of sampling; one yields probability samples in which the probability of selection of each respondent is assured. The other yields non-probability samples in which the probability of selection is unknown (Brink et al., 2014).

This study used a convenience sampling method of non-probability sampling design to select the clients used as respondents. A convenient sample consists of using the most readily available or most convenient group of subjects for the sample (Brink et al., 2014). This method was chosen because it provided easy access to the respondents. It was simple, practical, economical, and quick and did not require an elaborate sampling frame which was not available. All women visiting the sampled local clinics of Mopani district at the time of data collection were recruited to participate in the study, only those who met the criteria of inclusion and were attending the ANC and postnatal clinic at Mopani district areas when the researcher was present at the clinic for data collection. The parameters of generalizability in the sample were eligible; the study seeks to generalize to a wider population (Burns & Grove, 2015).

3.4.1 Sampling of the municipality

A non-probability convenience sampling in this study, it involves conscious selection of a certain municipality to be included in the study by the researcher. Non-probability convenience implies that a researcher is guided by some visible characteristics, such as gender or race (Kumar, 2011). Ba-Phalaborwa Municipality was conveniently selected to be the representative of the population. The results of the study were generalized to the population of Mopani district. The reason for selecting Ba-Phalaborwa municipality is that the population can be easily accessible by the researcher at local clinics.

3.4.2 Convenience sampling

In convenience sampling, the researcher chooses the sample according to ease of access (Brink et al., 2014). It makes use of people who are easily or readily available, are easily recruited or who volunteer for sample inclusion (Christensen et al., 2011). This was done in total, ten (10) local clinics of Ba-Phalaborwa municipality were used, namely: Mashishimane Clinic, Homulani Clinic, Namakgale A Clinic, Namakgale B Clinic, Bustop Clinic, Benfarm Clinic, Mahale Clinic, Lulekani Clinic, Selwana Clinic and Makhushane Clinic and the population was easily accessed their availability for data collection was also at their convenience.

3.4.3 Sample size

According to Polit and Beck (2015), quantitative data from large sample are often strong in generalization, precision and control over extraneous variables. The sample size was calculated using Solvin's formula, where "N" is the total number of the pregnant and lactating women of Ba-Phalaborwa visiting each clinic, "n" is the sample size and "e" is the acceptable level of error. The researcher was happy with a confidence level of 95 percent which is a margin error of 0.05 (Fox, Hunn & Mathers, 1988).

$$n = \frac{N}{1 + (N \times e^2)}$$
$$n = 1300 / (1 + (1300 \times 0.05^2))$$

Sample size (n) = 306

The sample size was 306 pregnant and lactating women found at 10 local clinics of Ba-Phalaborwa.

3.5 DATA COLLECTION

Data collection is a systematic means of gathering information related to the research purpose or questions (Burns & Grove, 2015). In quantitative research, data collection involves obtaining numerical data to address the research objectives and questions (Grove et al., 2013). The instrument to be used to collect data will be questionnaires. Questionnaires allow the participants to complete the instrument themselves. Questionnaires are the quick way of obtaining data from large group of people; participants feel a greater sense of anonymity and are more likely to provide honest answers (Brink, 2011). With the fact that data will be collected from 306 respondents, questionnaires enabled the researcher to collect enough data within short space of time. One of the easiest research instruments to test reliability and validity is questionnaire (Brink, 2011).

The questionnaires were self-administered to the respondents and the researcher was with the research assistant to clarify questions that the respondents might not understand. Data was collected in June to September 2018, using a self-administered structured questionnaire. The respondents attending the ANC and postnatal clinic were recruited to participate in the study following the explanation made by the research on the purpose of the study. Detailed information about the study was given to the women using

their own home language before consent to participate was obtained. Both verbal and written consent was obtained before participating in the completion of the questionnaires.

The researcher provided each respondent an opportunity to be invited into an already prepared private room in order to complete the questionnaire if able to read well and write. Those who were not able to read or write well were assisted by the researcher. Data was collected at the 10 local clinics of Ba-Phalaborwa municipality. Data was collected after consultation to avoid interruption of the services of the respondents and data were collected only on five working days: Monday to Friday to avoid collecting on weekend in the absence of the Operational Manager of each clinic.

3.5.1 Research instrument

According to Brink et al (2014), the choice of a data-collection method is one of the most important steps in the research process. Different instruments can be used on their own or in combination with one another. A structured questionnaire was designed after the literature review and with the help of the two Supervisors and the Statistician.

Questionnaires were administered and were used as the data collection instrument. The structured questionnaire was selected because it enabled the investigator to be consistent in asking questions and data yielded was easy to analyze with the help of a Statistician and using the SPSS version 23.0 computer program (Burns & Grove, 2015).

In the structured questionnaire the researcher asked open-ended and closed-ended questions to enquire on the knowledge that the respondents have on

knowledge, attitudes and practices on nutrition as well as their thoughts about the phenomenon under study.

The respondents were given questionnaires directly to avoid misinterpretation and to ensure clarity on all issues. Burns and Grove (2015) maintain that a questionnaire is the best method of collecting data especially if the survey strategy is used.

The questionnaire has specific advantages. Polit and Hungler (2015) point out that the specific advantages of using a questionnaire which are:

- Questionnaire is a rapid and efficient method of gathering information to promote freedom to express them better through answering freely what they feel in the questionnaires.
- Measurement is enhanced because all subjects respond to the same questions promoting equality and not being biased.
- Subjects are kept anonymous to promote confidence within the respondents so that they can be able to express themselves freely without worrying of being exposed.

The researcher collected data by using self-administered questionnaires. The items included in the structured questionnaire were designed by the researcher with an assistance of the Supervisors and based on information acquired during the literature review. A Statistician evaluated the items on the questionnaire and also gave corrections.

The researcher designed a structured questionnaire schedule with open-ended and closed-ended questions. A questionnaire schedule is a questionnaire with closed or fixed alternative questions as well as indications of how to answer each question (Brink, 2014). Structured questionnaires are

formalized so that all respondents see the same questions in the same order and in the same manner. Structured questionnaire has the following advantages:

- Questionnaires are more feasible for most people that they help them feel more comfortable knowing that their answers won't be linked back to their identities.
- The responses can also be obtained from individuals who cannot read or write.
- The response rate for questionnaires is usually high as respondents are less likely to refuse to be interviewed if they are available.
- A questionnaire is a flexible method, which allows the researcher to explore the deeper meaning of phenomena.
- Questionnaires also produce information through personal observations of the respondents' verbal and non-verbal communication.
- The researcher can clarify ambiguous or confusing questions.
- The respondents are less likely to leave a question unanswered (Burns & Grove, 2015; Polit & Beck, 2015).

The two structured questionnaires (pregnant and lactating women separately) were divided into four sections:

Section A: Items relating to socio-demographic information of the respondents.

Section B: Questions relating to knowledge on nutrition.

Section C: Questions relating to attitudes on nutrition.

Section D: Questions relating to practices on nutrition.

The questions were clear and arranged in such a way that data collected was as easy and accurate as possible (Polit & Hungler, 2015).

3.5.2 Data collection procedure

Individual questionnaires were administered to allow the women who were unable or unlikely to complete questionnaires on their own, such as those who were not literate enough for reading, writing and ability to express themselves in the English language (Burns & Grove, 2015). The questions in the questionnaire were written in English but those who were not able to write or read English were assisted by the researcher. The majority of the community use Tshivenda, Sotho and Tsonga and the researcher is good in those languages. During each session of filling in the questionnaire in each clinic, the respondents were given an opportunity to ask questions concerning the research.

The total number of respondents was 306 and each of them was thanked by the researcher for participating in the study. Each filling of questionnaire took approximately thirty minutes to some of the respondents but some forty minutes to complete the questionnaires.

3.5.3 Validity

Polit and Hungler (2015) defined validity as the degree to which an instrument measures what the researcher intends to measure. Validity addressed the appropriateness, meaningfulness and usefulness of the specific inferences made from instrument scores. It has to do with truth strength and value (Burns & Grove, 2015). The structured questionnaire mostly focused on content validity, which refers to the accuracy with which an instrument measures the factors under study. Therefore, content validity was concerned with how accurately the questions asked intended to elicit the information sought. The research instruments were tested for content validity.

3.5.3.1 Content validity

Content validity refers to the extent to which various research elements measures what each one purport to measure (Polit & Hungler, 2015). An instrument cannot be measuring the validity attribute of interest if it is erratic, inconsistent and inaccurate. However, an instrument can be reliable without being valid. The central aim of a data collection instrument is to establish a relationship between the independent variable and dependent variable with high degree of certainty. A data collection instrument should measure what it is supposed to measure. The content validity was achieved through a critical review of the instrument by the supervisor and joint supervisor and other experts in the area of study. The statistician scrutinized the items constructively for subsequent statistical analyses using the SPSS Version 23.0 computer program. A pre-test was also carried out to ensure validity.

3.5.3.2 Construct validity

Construct validity ensures that abstract concepts are measured adequately and logically, and relationships between variables are identified with the instrument based on theory, and clear operational definitions (Brink, & Wood, 2014; Burns, & Grove, 2015).

Construct validity includes the definition of variables in line with existing literature or theory and differentiates between respondents who possess the trait and those without the trait (Burns & Grove, 2015). In this study the questionnaire was based on the literature reviewed and the relevance to the variables in the study. The variables were operationally defined to create common understanding between the researchers and readers.

3.5.3.3 Threats to internal and external validity

Validity is an instrument to which the instrument actually reflects the abstract construct being examined (Burns & Grove, 2015). The types of validity below are as follows:

3.5.3.3.1 Internal validity

Internal validity is the extent to which the results of the study reflect reality rather than extraneous variables. Threats to internal validity are factors that may give false positive or false negative in the measurement of variables. Lack of internal validity may be observed when other variables rather than the independent variables under study are responsible for part of or the entire observed outcome on the dependent variable. Therefore, the researcher has to be observant to other variables rather than the dependent variables that may affect the outcome of the results (Burns & Grove, 2015). The researcher was observant of the following factors, which could give false or negative measurement of the variables in the study.

3.5.3.3.2 External validity

External validity deals with the ability to generalize the findings of the study to other members of the population rather than the sample (Burns & Grove, 2015). The study was generalized due to the sampling approach of respondents in this study.

3.5.3.3.3 Reliability

According to Burns and Grove (2015), reliability is defined as an extent to which an instrument consistently measured a concept. Reliability relates to the precision and accuracy of the instrument. If used on a similar group of respondents in a similar context, the instrument should yield similar results (Brink et al., 2014). Accurate and careful phrasing of each question to avoid ambiguity and leading respondents to a particular answer ensured reliability

of the tool. The respondents were informed of the interview and of the need to respond truthfully.

3.5.4 Pre-test

A pre-test is a trial run of the major study. Its purpose is to check the time taken to complete the questionnaire whether it is too long or too short too easy or too difficult and to check the clarity of the questionnaire, items and to eliminate ambiguities or difficulties in wording (Brink et al., 2014). A pre-test was conducted to test the questionnaire for reliability and validity. Ten respondents with similar characteristics to the research sample who were not included in the main study were recruited for filling in questionnaires. These respondents were recruited within the sampled local clinic: Thengwe clinic of Vhembe District in Thulamela municipality. All questions with some problem were re-worded and corrected. Time for conducting filling of questionnaires each respondent was approximated to avoid delay (Brink, 2014).

3.6 DATA ANALYSIS

Data analysis is “the systematic organization of research data and the testing of research hypothesis, using those data” (Polit & Hungler, 2015). It also entails “categorizing, ordering, manipulating and summarizing the data and describing them in meaningful terms” (Brink et al., 2014).

The completed questionnaires were given to a Statistician who used the SPSS version 23.0 computer program to analyze the data. Most of the questions included in the questionnaire were closed- ended questions. The questions were coded for easy analysis by computer. The open-ended questions were categorized by hand by the researcher. A member of Computer Support Services at the University of Venda captured the data. The findings were

discussed and the data presented in the form of frequency tables and bar graphs. Descriptive and inferential statistics were used in the data analysis and summaries included descriptive statistics, frequencies and percentages.

3.7 ETHICAL ISSUES

Conducting nursing research requires not only expertise and diligence but also honesty and integrity (Burns & Grove 2015). When human subjects are used in a research study, they have to know the activities they will be involved in, that their rights need to be protected and their person should be safeguarded hence the researcher needed to ensure their adequate protection.

Brink et al (2014) defined ethics as “a code of behavior considered correct”. It is crucial that all researchers are aware of research ethics. Ethics relate to two groups of people; those conducting research, who should be aware of their obligations and responsibilities, and the “researched upon”, who have basic rights that should be protected.

The study therefore had to be conducted with fairness and justice by eliminating all potential risks. The respondents must be aware of their rights. Ethical issues observed in the study included:

- Informed consent
- Right to anonymity and confidentially
- Right to privacy, justice, beneficence
- Respect for persons (Brink et al., 2014).

3.7.1 Ethical considerations

The researcher outlines the measures that were taken to ensure an ethical study as much as is possible. Creswell (2015) as well as Burns and Grove (2015) state that five basic moral principles exist for ethical guidelines: respect for persons and their autonomy, beneficence and non-maleficence, trust, justice, fidelity and scientific integrity (Polit & Beck, 2015). The researcher discussed these as well other ethical considerations such as the necessary approvals. In addition to these factors, the researcher ensured that completion of research questionnaires was carried out in private venues: a designated room within the sampled health care facilities. The researcher considered it ethical to disallow anybody else to have access to any of the data collection information such as responses checking of the questionnaires by unauthorized persons. The researcher therefore, kept all the physical data stored in a locked place where the key was kept by the researcher till the finalization of capturing of the data by the Statistician.

3.7.2 Research approval

Ethical clearance was obtained from the University of Venda, as well as from the Provincial Department of Health, as demonstrated by the clearance certificate and the approval letter granted by the Department of Health. In addition, the researcher also sought approval from Operational Managers to carry out the research in the sampled local clinics. For application of permission (see Annexure A&B) and for permission granted approvals (see Annexure).

3.7.3 Voluntary participation/autonomy

Autonomy occurs when a person is in the stage where he/she can make decisions and committing to them. Respecting this means that a person has the right to choose to be in a study and to be allowed to do so. This can be facilitated by offering the relevant information for a study and allowing a person to accept or refuse to participate (Polit & Beck, 2015).

Consent as well as verbal assurance, was given to all the recruited respondents during the study that they are free to participate or to drop out of the study at any time, should they choose to do so. Consent ought to be sort, but the respondents needed to have adequate information about the study, which they obtained.

Informed consent involves obtaining consent from the respondents after providing information about the study, for example, adequate purpose, the funder, introducing the researcher explaining how the data is to be used, what is required of the respondents, an overview of the likely topics and the duration of the data collection (Polit & Beck, 2015).

Informed consent was sought before engaging in the completion of the self-administered questionnaires from each individual recruited respondent. The respondents were offered language appropriate informed consent forms, which outlined the purpose and issues surrounding the study; their concerns and questions, were addressed before they were asked to sign the consent forms. The signed consent forms were an indication that they had understood and accepted their role and this was proof of the following ethical guidelines by the researcher.

3.7.4 Anonymity and confidentiality

3.7.4.1 Anonymity

The issue of anonymity was explained and clarified to the respondents. Anonymity guarantees the identity of a respondent will not be known outside the research teams. In a case where a third party is involved in facilitating participation to a study, it should be clarified that absolute anonymity cannot be given (Polit & Beck, 2015).

3.7.4.2 Confidentiality

Confidentiality means that attribution of comments in reports or presentations to identified respondents must be avoided. This is in both directly (linkage to a name-specific role) or indirectly (referring to a collection of characteristics that may lead to identification) (Polit & Beck, 2015).

The researcher did not disclose a respondent's identity after gathering information. The researcher reassured the respondents that their information is meant for research and not divulged it. Respondents were told that their involvement in the study is voluntarily and they have the right to terminate their participation at any stage of the data collection.

3.7.4.3 Confidentiality and anonymity

Confidentiality is “a basic ethical principle while anonymity is one way in which confidentiality is maintained. To ensure anonymity, steps are taken to protect the identity of the individual by neither giving their name when presenting research results, nor including identifying details which may reveal their identity such as workplace, personal characteristics and occupation” (Brink et al., 2014).

In this study, anonymity was achieved by not putting names on the questionnaire. The researcher at the end should not be able to link any information to any participant. The filling of the self-questionnaires was conducted in a private room where no third person could overhear any form of conversation or see anything inside.

3.7.5 Avoiding harm

Avoiding harm is another basic human right to be considered when conducting research on human beings. According to Burns and Grove (2015), there are risks that may be encountered during the study, such as psychological and emotional harm. In this study, psychological harm through

periods of long waiting and maintaining confidentiality and anonymity was the probable risk the patients could have encountered. The researcher spent thirty to forty minutes in allowing each respondent to complete the self-administered questionnaires with no rush. Maintaining privacy, confidentiality and anonymity during the filling of the questionnaires also prevented psychological harm.

3.7.6 Informed consent

Informed consent is “a legal requirement before one can participate in a study” (Brink et al., 2014). After a full explanation of the nature of the study, respondents were asked to give either verbal consent for those who could not read or write or written consent of their willingness to participate in the study (see Annexure C).

3.7.7 Justice

Justice seeks to answer the question: who is the recipient of the research benefits and who bears the burdens? The goal is for a sense of fairness in the distribution of the study benefits to be established. Therefore, the following should be under consideration as the study is designed and carried out: the distribution of possible benefits of the study; whether all research respondents should receive equal benefits; whether non-respondents and research respondents should benefit equally. It is suggested that the research respondents should benefit more. However, this is a simplistic view as the varying benefits at distinct stages are not always known, including for respondents. It is unlikely that justice will be achieved as, according to Brink et al., (2014); (Polit & Beck, 2015), it is a difficult moral principle to accomplish.

3.7.8 Beneficence and non-maleficence

3.7.8.1 Beneficence

Doing well is termed beneficence. Studies are required to be designed in such a manner that maximal probability of benefit is rendered to the respondent minimal probability of harm is rendered to the respondent. These ethical considerations are screened by second and third parties: it is considered when approvals are being sought to carry out the study. The researcher obtained an Ethical Clearance Certificate for the study from the University of Venda Ethics Committee and permission from Department of Health provincially and an approval letter to utilize sampled clinics to collect data.

3.7.8.2 Non-maleficence

Doing no harm is termed non-maleficence (Polit & Beck, 2015). Consideration needs to be given to how a study may potentially harm a respondent and mitigating actions to be implemented. This is common in studies of sensitive topics since painful experiences may be uncovered and previously undisclosed information may be divulged.

As a result, respondents were given clear understanding of the issues to be addressed before consent to participate was sought. Sensitive and potentially sensitive topics were addressed through clear and direct questions. In this manner, respondents were not faced with ambiguity or confusion about subjects they might have possibly preferred to avoid. Throughout the study there was an understanding to signs of discomfort and sensitivity and flexibility in continuing or stopping in the completion of the forms if anything is experienced. The researcher did not imagine that the study would harm any of the respondents in any way. No harm was reported during or after the study.

3.7.9 Respect for persons as autonomous individuals

Respect for persons is a basic human right. Autonomous individuals have the right to choose to either participate or not, in the research. The Collins English Dictionary (2016) defined choice as “the act or an instance of choosing or selecting; the opportunity or power of choosing”. The decision is to be made without coercion. Respondents were allowed to act independently by giving their informed consent to participate in the study. In this study it was ensured that respondents gave informed consent to participate in the study. Before the respondents giving consent, the purpose of the study was fully explained to them in the language they were well conversant with. Risks and benefits were highlighted. The respondents were informed that participation was voluntary and they were free to withdraw should they so wish. The respondents were assured that neither their participation or withdrawal or refusal to participate would affect their entitlement to health services. Before signing the consent, there was a period of question time to ensure that the respondents fully understood the explanations. At the end of the explanations, the respondents were asked to sign a written consent (see Annexure C).

3.7.10 Freedom of exploitation

The researcher protected respondents from psychological, social harm and exploitation by carefully considering the phrasing of the question in the questionnaire. Explanation was made to the respondents that if they are unable to proceed with the completion of the questionnaire due to emotional strain and they can withdraw from the study. Respondents were assured that the information they will provide will not be used against them (LoBiondo-Wood & Haber, 2013). The researcher recognised and appreciated the local culture and traditions when interacting with the respondents, the use of local language was respected. Respondents were informed that there is no financial reward of any form for participating in the study.

3.8 SUMMARY

This Chapter discussed the research methodology that the researcher used in the study. The research designed, target population, sampling design, data collection, data analysis and ethical issues were presented. The next chapter presents the results and interpretation of the study.

CHAPTER 4

ANALYSIS OF DATA

4.1 INTRODUCTION

In the previous chapter, the research design and methods were discussed. This chapter focuses on the data analysis strategy and discussion. In this study, the researcher used the Health Believe Model (HBM) as a conceptual framework that guided the study namely, modifying factors, individual perceptions and Likelihood of actions to promote health to the pregnant women and the postnatal women.

The data collected enabled the researcher to evaluate the knowledge, attitudes and practices on nutrition by pregnant and lactating women attending antenatal and post-natal clinics at the sampled local clinics in Mopani district of Limpopo Province, South Africa. The HBM explained why some women took specific actions to avoid complications associated well balance diet and while others failed to do so. Beliefs about personal susceptibility were consistently associated with the adoption of multiple protective behaviors, suggesting that future intervention efforts should focus more extensively on women s' beliefs and provide education to overcome barriers to proper nutrient to prevent complications on the mother and the baby.

4.1.1 The purpose of the study

The purpose was two folds:

- To describe knowledge, attitudes and practices on nutrition among pregnant and lactating women attending antenatal and post-natal clinics at the sampled local clinics in Mopani district of Limpopo Province, South Africa.

- Make recommendations to health care authorities for addressing the identified factors, thereby enhancing the life of the pregnant and post-natal women from all the participating health care clinics and the entire country.

4.1.2 Research objectives

The purpose of the study was to describe knowledge, attitudes and practices on nutrition among pregnant and lactating women attending antenatal and post-natal clinics at the sampled local clinics in Mopani district of Limpopo Province, South Africa. The study objectives were:

- Explore knowledge on nutrition among pregnant and lactating women in Mopani district of Limpopo Province, South Africa.
- Describe attitudes on nutrition among pregnant and lactating women in Mopani district.
- Explain practices on nutrition among pregnant and lactating women in Mopani district.
- Provide recommendations that could add to the improvement lives of the pregnant women and postnatal women and their new-born of neonates.

The results of this research address the objectives of the study and are organized according to the sections of the structured questionnaire as follows:

Section A: Items relating to socio-demographic information of the respondents.

Section B: Questions relating to knowledge, attitude and practices on nutrition among pregnant women.

Section C: Questions relating to knowledge, attitude and practices on nutrition among lactating women.

4.2 RESEARCH RESULTS FROM PREGNANT AND LACTATING WOMEN

The statistical information was derived from a sample of 306 respondents who completed questionnaires. Some of the respondents chose not to complete certain sections of the questionnaires, or certain items within specific sections, presumably because of the personal nature of the questions asked, especially those on information of nutrition. The percentages were calculated on the number of responses to each item (valid percent), not on the total number of questionnaires received. This was done as a function of the SPSS version 25 computer program on the advice of Mrs. Mulaudzi, from the Department of Statistics at the University of Venda. Where applicable, differences and comparisons were noted between the educated pregnant/postnatal women from the uneducated pregnant/postnatal women as well as those women who are poverty stricken in the rural areas. The recruited sample to participate in the study consisted of a total of 400 pregnant and lactating women, however, only 306 pregnant and lactating women accepted to participate in the study. Purposively sampled clinics were ten (10) from the Ba-Phalaborwa municipality: Mashishimane Clinic (32), Homulani Clinic (28), Namakgale A Clinic (27), Namakgale B Clinic (30), Bustop Clinic (29), Benfarm Clinic (31), Mahale Clinic (31), Lulekani Clinic (33), Selwana Clinic (31) and Makhushane Clinic (34).

There was 100% response rate from the target population. They all resided at the Ba-Phalaborwa municipality. A variety of questions were asked to assess the nutrition knowledge, attitudes and nutrition-related practices among pregnant and the lactating women at the Ba-Phalaborwa municipality. The inclusion criteria were pregnant women and the lactating women aged between 16 – 36 years and above. Majority of the pregnant and the lactating women were aged between 26-30 years (22.6%) while (9.8%) were aged

between 31-35 years. As many as 110 (35.9%) of the respondents younger than 20 years.

SECTION A

4.3 SOCIO-DEMOGRAPHIC INFORMATION OF THE RESPONDENTS

Item 4.3.1 Age, ability to read and write, educational level, religion, ethnic group, marital status, employment status, husband occupation and family size of the respondents.

Table 4.1 Age, ability to read and write, educational level, religion, ethnic group and marital status of the respondents.

| | VARIABLES | PREGNANT % | LACTATING % |
|-------------------------------------|------------------|-------------------|--------------------|
| <i>1. Age</i> | 16-20 years | 59 (39.3) | 51 (32.7) |
| | 21-25 | 33 (22) | 45 (28.8) |
| | 26-30 | 27 (18) | 42 (26.9) |
| | 31-35 | 20 (13.3) | 10 (6.4) |
| | 36 and above | 11 (7.3) | 8 (5.1) |
| | Total | 150 (100) | 156 (100) |
| <i>2. Ability to read and write</i> | Yes | 145 (96.7) | 148 (94.9) |
| | No | 5 (3.3) | 8 (5.1) |
| | Total | 150 (100) | 156 (100) |
| <i>3. Educational level</i> | None | 5 (3.3) | 8 (5.1) |
| | Primary | 20 (13.3) | 17 (10.9) |
| | Secondary | 78 (52) | 85 (54.5) |
| | Tertiary | 33 (22) | 39 (25) |
| | Abet | 14 (9.3) | 7 (4.5) |
| | Total | 150 (100) | 156 (100) |
| <i>4. Religion</i> | Muslims | 19 (12.7) | 15 (9.6) |
| | Christianity | 128 (85.3) | 135 (86.5) |
| | Buddhism | 3 (2) | 6 (3.8) |
| | Total | 150 (100) | 156 (100) |
| <i>5. Ethnic group</i> | Tsonga | 98 (65.3) | 89 (57.1) |
| | Venda | 17 (11.3) | 42 (26.9) |
| | Pedi | 11 (7.3) | 25 (16) |
| | Sotho | 24 (16) | 30 (19.2) |
| | Total | 150 (100) | 156 (100) |

| | | | |
|--------------------------------|----------------|------------------|------------------|
| 6. Marital status | Single | 66 (44) | 82 (52.6) |
| | Married | 60 (40) | 51 (32.7) |
| | Widowed | 9 (6) | 13 (8.3) |
| | Divorced | 15 (10) | 10 (6.4) |
| | Total | 150 (100) | 156 (100) |
| 7. Employment status | Employed | 58 (38.7) | 63 (40.4) |
| | Unemployed | 92 (61.3) | 93 (59.6) |
| | Total | 150 (100) | 156 (100) |
| 8. Husband's employment status | Employed | 86 (57.3) | 106 (68) |
| | Unemployed | 40 (26.7) | 27 (17.3) |
| | Missing | 24 (16) | 23 (14.7) |
| | Total | 150 (100) | 156 (100) |
| | 9. Family size | Two | 15 (10) |
| Three | | 45 (30) | 34 (21.8) |
| Four | | 31 (20.7) | 43 (27.6) |
| Five and above | | 65 (43.3) | 49 (31.4) |
| Total | | 150 (100) | 156 (100) |

Table 4.1 displays the age distribution of the respondents. The table shows that most of the respondents, 59 (39.3%) of pregnant women and 51 (32.7%) of lactating women fell in the age category of 16-20 years. Almost all of the respondents, 145 (96.7%) of pregnant women and 148 (94.9%) of lactating women reported that they were able to read and write. Those who were not able to read and write were assisted by the researcher to complete the questionnaires. The educational level which was dominant was secondary level with 78 (52%) of pregnant women and 85 (54.5%) of lactating women. The dominant religion was Christianity with 128 (85.3%) of pregnant women and 135 (86.5%) of lactating women. The ethnic group which was dominant in this study was Tsonga speaking women with 98 (65.3%) of pregnant women and 89 (57.1%) of lactating women.

Marital status which dominated the study was single with 66 (44%) of pregnant women and 82 (52.6%) of lactating women. More than half of the respondents were unemployed, 92 (61.3%) of pregnant women and 93 (59.6%) of lactating women. Contrary was the case with husbands' employment status, 86 (57.3%) of pregnant women and 106 (68%) of lactating women. The

family size which was dominant among the respondents was of five and above with 65 (43.3%) of pregnant women and 49 (31.4%) of lactating women.

Item 4.3.2 Household characteristics

Table 4.2 Household characteristics distribution of respondents

| | <i>VARIABLES</i> | <i>PREGNANT (%)</i> | <i>LACTATING (%)</i> |
|--|---------------------------------|---------------------|----------------------|
| <i>1. Source of food</i> | Purchasing in the market | 101 (67.3) | 92 (59) |
| | Garden/farms | 13 (8.7) | 17 (10.9) |
| | Both purchasing and garden/farm | 36 (24) | 47 (30.1) |
| | Total | 150 (100) | 156 (100) |
| <i>2. Main sources of water for domestic use</i> | Own tap | 52 (34.7) | 48 (30.8) |
| | Community tap | 87 (58) | 101 (64.7) |
| | Borehole | 11 (7.3) | 7 (4.5) |
| | Total | 150 (100) | 156 (100) |

Majority of the respondents, 101 (67.3%) of pregnant women and 92 (59%) of lactating women were purchasing food in the market while the minority of respondents, 13 (8.7%) of pregnant women and 17 (10.9%) of lactating women were getting food from garden or farms. Community tap was the main sources of water for domestic use with 87 (58%) of pregnant women and 101 (64.7%) of lactating women tap while as many as 52 (34.7%) of pregnant women and 48 (30.8%) of lactating women reported that they were getting their water from their own taps. Only few respondents, 11 (7.3%) of pregnant women and 7

(4.5%) of lactating women reported that they were getting their water from borehole.

In the next sections pregnant women's results will be presented separately from lactating women since the questions on the questionnaire are different. The total number of pregnant women who participated in the study was 150 whereas the total number of lactating women who participated in the study was 156.

SECTION B

4.4 QUESTIONS RELATING KNOWLEDGE, ATTITUDES AND PRACTICES ON NUTRITION AMONG PREGNANT WOMEN.

4.4.1 KNOWLEDGE ON NUTRITION AMONG PREGNANT WOMEN

Item 4.4.1.1 Knowledge on nutrition among pregnant women (n=150)

Table 4.3 Respondents' responses on knowledge on nutrition

| VARIABLES | | FREQUENCY (%) |
|---|---|----------------------|
| 1. Provision of well-balanced nutrition. | Eat balanced diet | 142 (94.6) |
| | Don't know | 08 (5.3) |
| Total | | 150 (100) |
| 2. Definition of balanced diet. | Eating proper nutrients for good health | 131 (87.3) |
| | Don't know | 19 (12.7) |
| Total | | 150 (100) |
| 3. Three foods to avoid during pregnancy. | Alcohol, unwashed vegetables and caffeine | 142 (94.7) |
| | Alcohol, caffeine and milk | 08 (5.3) |
| Total | | 150 (100) |
| 4. Drinking alcohol during pregnancy. | Yes | 12 (8) |
| | No | 138 (92) |
| Total | | 150 (100) |
| 5. Three risks of drinking alcohol. | Infant death, premature birth and miscarriage. | 130 (86.7) |
| | Weight gain, infant death and miscarriage | 20 (13.7) |
| Total | | 150 (100) |
| 6. Smoking during pregnancy | No | 150 (100) |
| Total | | 150 (100) |
| 7. Three risks of smoking during pregnancy. | Low birth weight, still birth and baby's learning disorder. | 139 (92.7) |
| | Low birth weight and still birth | 11 (7.3) |
| Total | | 150 (100) |
| 8. Risks of eating soil during pregnancy. | Anemia | 127 (85.7) |
| | Don't know | 23 (15.3) |
| Total | | 150 (100) |
| 9. Consumption of food not rich with vitamins and | Malnutrition | 147 (98) |
| | Don't know | 03 (2) |

| | | |
|---|----------------------------|------------------|
| <i>minerals.</i> | | |
| | Total | 150 (100) |
| 10. Sources of nutritional information. | Clinic and health officers | 25 (16.7) |
| | Clinic and media | 102 (68) |
| | Friends and relatives | 17 (11.3) |
| | Don't know | 06 (4) |
| | Total | 150 (100) |

The majority of the respondents, 142 (94.6%) reported that to provide good nutrients, a pregnant woman should eat balanced diet. Majority of pregnant women, 131 (87.3%) understood what balanced diet was. Almost all of the respondents 142 (94.7%) understood which foods to avoid during pregnancy but only 08 (5.3%) respondents were not fully aware. As many as 130 (86.7%) of the respondents understood risks of drinking alcohol during pregnancy while 20 (13.3%) of the respondents were not fully aware.

Majority of the respondents 139 (92.7%) were aware of the risks of smoking during pregnancy whereas all respondents, 150 (100%) reported that it was not healthy to smoke during pregnancy. Anemia was reported to be a risk of eating soil during pregnancy by 127 (85.7%) of the respondents. Malnutrition was reported to be the outcome of eating food not rich with vitamins and minerals by 147 (98%) respondents. Majority of respondents, 102 (68%) reported that they got nutritional information from clinic and media.

Figure 4.1 Knowledge about the consequences of poor diet intake in pregnancy

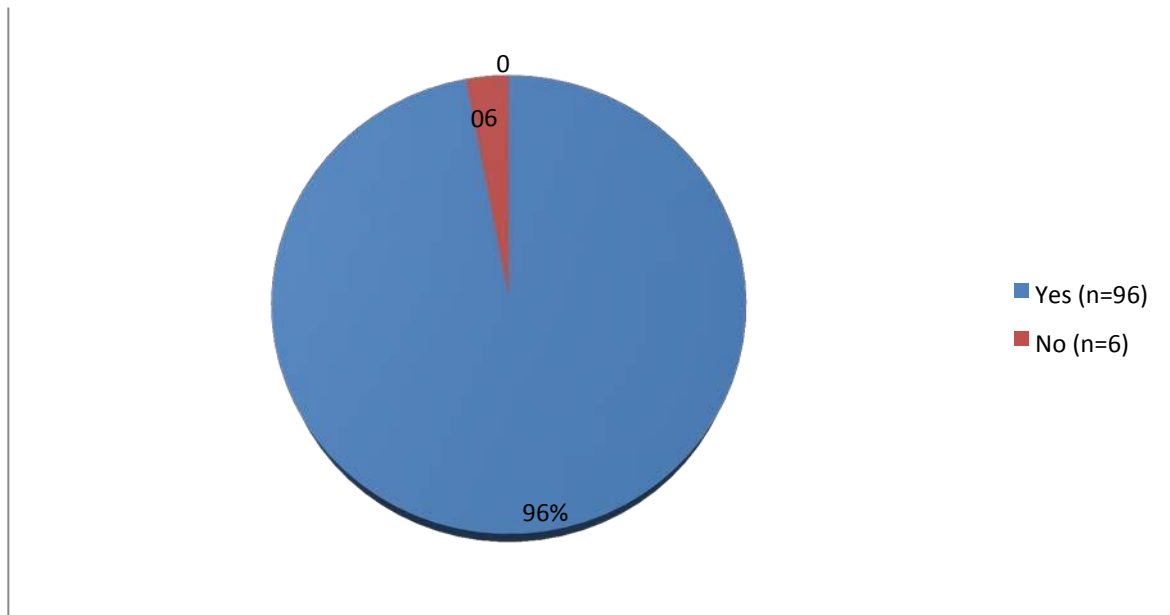


Figure 4.1 Knowledge about the consequences of poor diet intake (N=130)

Of the respondents 122 (96%) were not aware that poor dietary intake during pregnancy could lead to poor child growth and malnutrition. Only (4%) indicated that they were aware that poor nutrition could cause poor child growth.

According to Gomes, KRO and Speizer (2010), teenagers who perceive that their mother in laws disapprove of the pregnant mother to eat different types of diet because some of the food according their culture should not be eaten during pregnancy because of the taboos.

The results of this study show that 96% of the respondents did not know that poor dietary intake could lead to poor child growth.

4.4.2 ATTITUDES ON NUTRITION AMONG PREGNANT WOMEN

Item 4.4.2.1 Attitudes on nutrition among pregnant women (n=150)

Table 4.4 Respondents' responses on attitudes on nutrition among pregnant women

| VARIABLES | | FREQUENCY (%) |
|---|--------------|----------------------|
| 1. Possibility to eat balanced diet. | Yes | 101 (67.3) |
| | No | 32 (21.3) |
| | Don't know | 17 (11.4) |
| | Total | 150 (100) |
| 2. Eating soil during pregnancy. | Yes | 72 (48) |
| | No | 78 (52) |
| | Total | 150 (100) |
| 3. Wrongness of drinking alcohol during pregnancy | Yes | 104 (69.3) |
| | No | 46 (30.7) |
| | Total | 150 (100) |
| 4. Wrongness of smoking during pregnancy | Yes | 130 (86.7) |
| | No | 20 (13.3) |
| | Total | 150 (100) |
| 5. Importance of following the advice of healthcare provider on nutrition | Yes | 120 (80) |
| | No | 30 (20) |
| | Total | 150 (100) |
| 6. Importance of intake of iron supplements and folic acid | Yes | 121 (80.7) |
| | No | 29 (19.3) |
| | Total | 150 (100) |
| 7. Importance of eating always during pregnancy | Yes | 96 (64) |
| | No | 54 (36) |
| | Total | 150 (100) |
| 8. Possibility of changing diet during pregnant | Yes | 87 (58) |
| | No | 63 (42) |
| | Total | 150 (100) |

It is evident on the findings above that majority of the respondents, 101 (67.3%) reported that it was possible to eat balanced diet. Eating soil was considered as a solution of soil-craving during pregnancy by 72 (48%) of the respondents. Majority of the respondents, 104 (69.3%) reported that drinking alcohol during pregnancy was wrong while 46 (30.7%) of the respondents thought otherwise. Smoking during pregnancy was reported to be wrong by 130 (86.7%) of the respondents. Changing of diet during pregnant was reported to be impossible by 63 (42%) of the respondents.

The importance of following the advice of healthcare provider on nutrition was reported by 120 (80%) of the respondents whereas 30 (20%) of the respondents reported following the advice not important. Majority of the respondents, 121 (80.7%) reported that the intake of iron supplements and folic acid was important. Eating always during pregnancy was reported to be important by 96 (64%) of the respondents.

4.4.3 PRACTICES ON NUTRITION AMONG PREGNANT WOMEN

Item 4.4.3.1 Practices on nutrition among pregnant women (n=150)

Table 4.5 Respondents' responses on practices on nutrition among pregnant women

| VARIABLES | | FREQUENCY (%) |
|--|--------------|----------------------|
| 1. Following the advice of healthcare provider on nutrition. | Yes | 104 (69.3) |
| | No | 46 (30.7) |
| | Total | 150 (100) |
| 2. Consistency of following the advice on nutrition. | Every day | 27 (19) |
| | Always | 43 (28.7) |
| | Some times | 05 (3.3) |
| | Total | 150 (100) |

| | | |
|---|----------------|------------------|
| 3. Consistency of eating fruits and vegetables. | Every day | 34 (22.7) |
| | Always | 63 (42) |
| | Some times | 53 (35.3) |
| | Total | 150 (100) |
| 4. Drinking alcohol during pregnancy. | Yes | 06 (4) |
| | No | 116 (77.3) |
| | No answer | 28 (18.7) |
| | Total | 150 (100) |
| 5. Consistency of drinking alcohol. | Some times | 06 (4) |
| | Missing | 144 (96) |
| | | Total |
| 6. Daily eating frequency. | Two | 27 (18) |
| | Three | 82 (54.7) |
| | Four and above | 41 (27.3) |
| | | Total |
| 7. Following cultural practices on nutrition. | Yes | 78 (52) |
| | No | 45 (30) |
| | Don't know | 27 (18) |
| | Total | 150 (100) |

Some of the respondents, 46 (30.7%) reported that they were not following the advice of healthcare provider on nutrition however, 63 (42%) of the respondents were following the advice always. Less than half of the respondents, 63 (42%) reported that they were eating fruits and vegetables always. The question of drinking alcohol during pregnancy was not answered by 28 (18.7%) of the respondents. As many as 78 (52%) of the respondents reported that they were following cultural practices on nutrition.

Item 4.4.3.2 Cultural practices (n=150)

Table 4.6 Respondents' responses on cultural practices

| CULTURAL PRACTICES | FREQUENCY (%) |
|---|----------------------|
| 1. <i>A pregnant woman should not eat eggs to avoid a child to be born with no hair</i> | 18 (12) |
| 2. <i>Drinks with acids can cause abortion</i> | 11 (7.3) |
| 3. <i>If a mother eat chili the baby will cry a lot</i> | 07 (4.6) |
| 4. <i>Alcohol will cause the baby to have no hair</i> | 10 (6.7) |
| 5. <i>A pregnant woman must not eat chili because it will abort the baby</i> | 14 (9.3) |
| 6. <i>Sugar cane is not allowed because it makes the baby to be born with no hair</i> | 08 (5.3) |
| 7. <i>A woman must not eat too much because the baby will be too big</i> | 06 (4) |
| 8. <i>Things like achaar not to be eaten because it will abort a child</i> | 04 (2.7) |
| <i>Missing</i> | 72 (48) |
| Total | 150 (100) |

A dominant cultural belief was that a pregnant woman should not eat eggs to avoid a child to be born with no hair and it was reported by 18 (12%) of the respondents while 14 (9.3%) of the respondents reported that a pregnant woman should not eat chili because it will abort the baby. Eleven (7.3%) of the respondents reported that drinks with acids can cause abortion while 10 (6.7%) of the respondents reported that alcohol will cause the baby to have no hair. Six (4%) of the respondents reported that a woman must not eat too much because the baby will be too big.

SECTION C

4.5 QUESTIONS RELATING KNOWLEDGE, ATTITUDES AND PRACTICES ON NUTRITION AMONG LACTATING WOMEN.

4.5.1 KNOWLEDGE ON NUTRITION AMONG LACTATING WOMEN

Item 4.5.1.1 Knowledge on nutrition among lactating women (n=156)

Table 4.7 Respondents' responses on knowledge on nutrition

| VARIABLES | | FREQUENCY (%) |
|--|---|----------------------|
| 1. Provision of well-balanced nutrition | Eat balanced diet | 119 (76.3) |
| | Don't know | 24 (15.4) |
| | No answer | 13 (8.3) |
| | Total | 156 (100) |
| 2. Definition of balanced diet | Eating proper nutrients for good health | 102 (65.4) |
| | Don't know | 25 (16) |
| | No answer | 29 (18.6) |
| | Total | 156 (100) |
| 3. Eating any food during lactation | Yes | 17 (10.9) |
| | No | 139 (89.1) |
| | Total | 156 (100) |
| 4. Three foods to avoid during lactation | Alcohol, garlic and spices | 101 (64.7) |
| | Milk, fish and alcohol | 55 (35.3) |
| | Total | 156 (100) |
| 5. Weight gain during lactation | Eat foods rich with vitamins and minerals | 99 (63.5) |
| | Eat foods with more fats | 09 (5.8) |
| | Eat many times per day | 07 (4.5) |
| | Don't know | 16 (10.2) |
| | No answer | 25 (16) |
| | Total | 156 (100) |
| 6. Sources of nutritional information | Clinic and health officers | 45 (28.8) |
| | Clinic and media | 77 (49.4) |
| | Friends and relatives | 24 (15.4) |
| | Don't know | 10 (6.4) |
| | Total | 156 (100) |

Majority of the respondents, 119 (76.3%) reported that they provide good nutrition to themselves by eating balanced diet 13 (8.3%) of the respondents

never answered the question. Majority of the respondents 102 (65.4%) reported that balanced diet is eating proper nutrients for good health. Seventeen 17 (10.9%) of the respondents reported that it is health to eat any food during lactation.

As many 55 (35.3%) of the respondents were not knowledgeable on foods to avoid during lactation. More than half of the respondents, 99 (63.5%) reported weight gain is achieved by eating foods rich with vitamins and minerals while 16 (10.2%) of the respondents reported that they were not aware. Almost half of the respondents, 77 (49.4%) reported that clinic and media were their sources for nutritional information while 45 (28.8%) of the respondents reported clinic and health officers as their sources for nutritional information. Only few of the respondents, 24 (15.4%) reported that friends and relatives were their sources for nutritional information.

Item 4.5.1.2: Significance of Support on lactating mothers after Birth (N=156)

Mothers that participated in support groups were asked to rank different people that aided in their breastfeeding support shared their experiences on best practices on breastfeeding. The descriptive statistics that were asked: spouse support, family support, mother support, mother in-law support, physician support, lactation consultant support, nurse support and pediatrician support. The mothers were asked to rank the sources of support as very important =4, important =3, somewhat important =2 or not important =1. After analysis was done the groups that scored from a 3-4 suggested a higher level of support. Out of the total subject group (N=29), 14mothers ranked the spouse as a major supporter in breastfeeding with a mean score of 3.98 out of 4. The mothers also reported (n=36), 35 mothers reported that an important supporter was a lactation consultant with a mean score of 3.57

out of 4. This finding 54 shows the descriptive statistics for each person that would potentially support the mother with breastfeeding.

4.5.2 ATTITUDES ON NUTRITION AMONG LACTATING WOMEN

Item 4.5.2.1 Attitudes on nutrition among lactating women (n=156)

Table 4.8 Respondents' responses on attitudes on nutrition

| VARIABLES | | FREQUENCY (%) |
|--|-----|----------------------|
| 1. Possibility to eat balanced diet | Yes | 101 (64.7) |
| | No | 55 (35.3) |
| Total | | 156 (100) |
| 2. Importance of following the advice of healthcare provider | Yes | 123 (78.8) |
| | No | 33 (21.2) |
| Total | | 156 (100) |
| 3. Eating every time, you feel like eating | Yes | 50 (32.1) |
| | No | 106 (67.9) |
| Total | | 156 (100) |
| 4. Possibility to change diet | Yes | 100 (64.1) |
| | No | 56 (35.9) |
| Total | | 156 (100) |
| 5. Eating of different types of foods during meals | Yes | 119 (76.3) |
| | No | 37 (23.7) |
| Total | | 156 (100) |
| 6. Eating enough food during lactation | Yes | 92 (59) |
| | No | 64 (41) |
| Total | | 156 (100) |

Majority of the respondents, 101 (64.7%) reported that it was possible to eat balanced diet while 55 (35.3%) of the respondents reported that it was not possible. Following the advice of healthcare provider was reported as not important by 33 (21.2%) of the respondents while 123 (78.8%) of the respondents reported it being important. One hundred and six (67.9%) of the

respondents reported that it was necessary to eat every time they feel like eating. Sixty-four (41%) of the respondents reported that they were not able.

Less than half of the respondent, 56 (35.9%) reported that it was not possible to change diet while more than half of the respondents, 100 (64.1%) reported that it was possible. Majority of the respondents, 119 (76.3%) reported that they were eating different types of foods during meals whereas 64 (41%) reported that they were not able to eat enough food required during lactation.

4.5.3 PRACTICES ON NUTRITION AMONG LACTATING WOMEN

Item 4.5.3.1 Practices on nutrition among lactating women (n=156)

Table 4.9 Respondents' responses on practices on nutrition

| VARIABLES | | FREQUENCY (%) |
|---|--------------|----------------------|
| 1. Following the advice of healthcare provider on nutrition | Yes | 128 (82.1) |
| | No | 28 (17.9) |
| | Total | 156 (100) |
| 2. Consistency of following the advice on nutrition | Every day | 42 (26.9) |
| | Always | 59 (37.8) |
| | Some times | 27 (17.4) |
| | Total | 156 (100) |
| 3. Eating of well-balanced diet | Yes | 29 (18.6) |
| | No | 101 (64.7) |
| | Don't know | 26 (16.7) |
| | Total | 156 (100) |
| 4. Consistency of eating well-balanced diet | Every day | 10 (6.4) |
| | Always | 13 (8.3) |
| | Some times | 32 (20.5) |
| | Total | 156 (100) |
| 5. Consistency of eating fruits and vegetables | Always | 29 (18.6) |
| | Some times | 101 (64.7) |
| | Don't know | 26 (16.7) |
| | Total | 156 (100) |
| 6. Following cultural practices on nutrition | Yes | 112 (76.7) |
| | No | 20 (13.3) |

| | | |
|--------------|------------|------------------|
| | Don't know | 24 (16) |
| Total | | 156 (100) |

Majority of the respondents 128 (82.1%) reported that they were following the advice of healthcare provider on nutrition while 59 (37.8%) of the respondents were following the advice always. More than half of the respondents 101 (64.7%) reported that they were not eating well-balanced diet while only few of the respondents, 13 (8.3%) reported that they were eating balanced diet always. One hundred and one (64.7%) of the respondents reported that they were eating fruits and vegetables sometimes only 29 (18.6) always. Majority of the respondents, 112 (76.7%) reported that they were following cultural practices on nutrition, 20 (13.3%) of the respondents were not involved in cultural practices.

Item 4.5.3.2 Cultural practices (n=156)

Table 4.10 Respondents' responses on cultural practices

| CULTURAL PRACTICES | FREQUENCY (%) |
|--|----------------------|
| 1. <i>A lactating woman should eat "mutuku" to produce more milk.</i> | 25 (16) |
| 2. <i>A lactating woman should eat warm pap helps the mother to produce more milk.</i> | 31 (19.9) |
| 3. <i>Drinking tea helps the mother to produce more milk.</i> | 22 (14.1) |
| 4. <i>A lactating woman should eat a lot to gain weight and produce more milk.</i> | 34 (21.8) |
| <i>Missing</i> | 44 (28.2%) |
| Total | 156 (100) |

Majority of the respondents 112 (71.8%) answered the question, 34 (21.8%) of the respondents reported that a lactating woman should eat a lot to gain weight and produce more milk while 31 (19.9%) of the respondents reported that warm pap helps the mother to produce more milk, 25 (16.0%) of the respondents reported that a lactating woman should eat “mutuku” to produce more milk while the minority of the respondents 22 (14.1%) reported that drinking tea helps the mother to produce more milk. It was interesting that all the cultural practices mentioned by the respondents were not harmful to their health.

Figure 4.2: Beliefs of the respondents on types of foods to be eaten

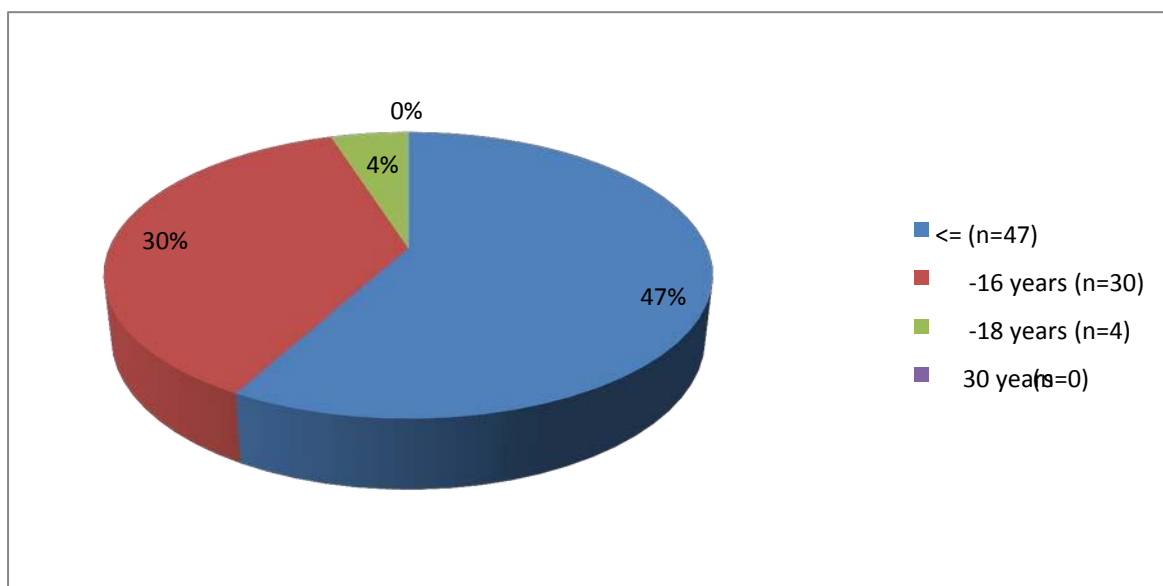


Figure 4.2 Beliefs of the respondents on types of foods to be eaten

Of the respondents, 47% were 14 years and younger, 30% (n=30) aged 15-16 years, 4% (n=4) aged 17-18 years and at 19 years all respondents had received the information on the different types of foods to be eaten during pregnancy. The knowledge of dietary types was associated with the age and the education and found mothers who are learned are more knowledgeable than those mothers who hold less education.

4.10 SUMMARY

In this chapter, data was presented, the findings of the data collected from pregnant and lactating women who attended ANC and postnatal clinics at the ten (10) sampled clinics in Mopani Municipality in Limpopo province. References were also made to the literature reviewed, where necessary. The next chapter 5 presents the discussion of the results.

CHAPTER 5

DISCUSSION OF THE RESULTS

5.1 INTRODUCTION

This study was carried out to assess the level of nutrition knowledge, attitudes and practices among pregnant and lactating women in the local clinics of Mopani District. It aimed to show the relationship between pregnant and lactating women in Mopani together with their socio-demographic characteristics. The survey method was used to acquire information by administering questionnaires.

5.2 NUTRITION KNOWLEDGE

The findings of this research show that majority of pregnant 142 (94.6%) were knowledgeable on the provision of well-balanced nutrition compared to 119 (76.3%) of lactating women. However, the findings are consistent with results of a study conducted by Kinyua in 2016 at Mbagathi hospital that reported that 93 percent of lactating women were knowledgeable on nutrition matters. This can be attributed to more access to nutrition information in rural areas nowadays as compared to past decades. Lack of a nutritionist in the local clinics also played a role but these days things are different.

Majority of pregnant women 102 (68%) had clinics and media as their sources of nutritional information but lactating women 77 (49.4%) only had half of the respondents. A small number of 17 (11.3%) of pregnant women and 24 (15.4%) of lactating women had friends and relatives as their nutrition

advisors. This may be attributed to more emphasis on knowledge and nutrition education sessions. On drinking alcohol during pregnancy and lactation, majority had a good sense that smoking should be avoided. Furthermore, the danger of malnutrition was properly understood among pregnant and lactating women while the minority thought otherwise. On the foods to avoid during pregnancy and lactation majority of the respondents had a good sense of understanding. This doesn't clearly show why Global acute Malnutrition levels are serious in the area. Majority of pregnant women understood clearly the risks of eating soil during pregnancy.

Pregnant and lactating women have a wide source of nutrition information. However, clinics continue to be an avenue through which majority of the women gain their nutritional knowledge. Other sources of nutrition education to the respondents include health officers, friends and media. On relatives it includes: mothers, mother-in-law, grandmothers and community members who had a previous experience of pregnancy and lactation; they act as office box where women source their nutritional knowledge.

5.2.1 ASSOCIATION BETWEEN NUTRITION KNOWLEDGE AND EDUCATIONAL LEVELS OF PREGNANT AND LACTATING WOMEN

Pregnant and lactating women who are less educated had average nutritional knowledge compared to those who are more educated. Education levels influences the level of nutritional knowledge as shown. According to Asim, Malik, Siddiqui, Nawaz and Ali (2016), women who had better education, indicate positive inclination to have maternal health care services. Whereas, women with primary education and above, about 3% are more likely to receive antenatal and postnatal health care as compare to illiterate, there by receiving health education that will promote better health as stipulated in the HBM. It is also found that there is a direct relationship between educational status of a women and better access to nutrition. Educational knowledge of women

determines the decision and choices that women make regarding nutrition during pregnancy and lactation (Bentum, 2017).

5.2.2 ASSOCIATION BETWEEN NUTRITIONAL KNOWLEDGE AND HUSBANDS EDUCATION LEVELS

Husbands' education level did not impact on their levels of nutritional knowledge as shown. This can be attributed to the fact that husbands do not influence what should be prepared in the homes. Culturally, men are prohibited from staying within their homes the whole day.

5.2.3 ASSOCIATION BETWEEN NUTRITIONAL KNOWLEDGE AND OCCUPATION OF PREGNANT AND LACTATING WOMEN

There is no positive significant difference between nutritional knowledge and pregnant and lactating women's occupation. This can be due to the fact that majorities are unemployed.

5.3 NUTRITION-RELATED ATTITUDES

Almost half of pregnant women 72 (48%) reported eating soil as the solution of soil-craving during pregnancy. These results differ from the findings by Nwafor (2018) who reported that 85% of women eat soil and most women believed that soil eating gives energy, taste nice, makes women feel strong, and makes stomach feel full. The other reason given by these women is that soil eating protects unborn baby from poison, gives nutrients to unborn baby, prevent prolonged labor, stops morning sickness. On the other hand, Ramasuhu (2017) reported that eating of soil among women can be learned behavior. It is common for pregnant and lactating women to eat soil on a

regular basis because of different reasons. The study indicated that women eat soil because of the heightened sense of smell and taste during pregnancy. This may be attributed to ignorance among women as nutritional information is available everywhere.

Majority of the pregnant women 121 (80.7%) in the study area had favorable attitudes the intake of iron supplements and folic acid. The results of this study is in line with the study by Abdullahi et al (2014) that reported that out of 856 women, 788 (92.1%) used iron-folic acid supplementation during pregnancy and 65.4% used folic acid while place of residence, occupation and level of education were not associated with iron-folic acid usage, older age and use of antenatal care were associated with iron-folic acid use.

Among pregnant women 44 (29.3%) reported that it was not possible to change diet during pregnancy. According to Angosi (2016) pregnant women find it difficult to change diet during pregnancy due to circumstances like poverty and lack of support from people around them. These findings concur with that of WHO (2015), which reported that pregnant women mostly in Africa are still vulnerable to inability of changing diet due to unfavorable conditions like lack of resources to meet nutrients required during pregnancy. On the other hand, 43 (27.6%) of lactating women reported that they weren't able to eat enough food required during lactation. This can be the reason of poverty causing them not to be able to change diet.

5.3.1 RELATIONSHIP BETWEEN NUTRITION KNOWLEDGE AND NUTRITION RELATED ATTITUDES

There was a positive significant association between nutrition knowledge and attitudes among pregnant and lactating women in Mopani. The more favorable the attitude of pregnant and lactating women, the more their nutritional knowledge.

5.3.2 RELATIONSHIP BETWEEN ATTITUDES AND PRACTICES

There was a positive significant association between nutrition-related attitudes and practices. Positive attitude reinforces behavior change when knowledge is practical. This gap in practice could be attributed to other factors influencing food and nutritional practices such as affordability, social factors and food availability. Social factors include culture which may lead them to prefer what is familiar to them regardless of attitude.

5.4 NUTRITION PRACTICES

As many as 46 (30.7%) of pregnant women reported that they were not following the advice of the healthcare providers on nutrition while 28 (17.9%) of lactating women reported that they were not following the advice of the healthcare providers on nutrition. These findings suggest that more emphasis has to be made on nutrition to pregnant women as compared to lactating women. These findings also show that the nutritional practices among pregnant women were poor.

Less than half of pregnant women, 63 (42%) reported that they were eating fruits and vegetables always while 29 (18.6%) of lactating women were eating fruits and vegetables always. The reason for lactating women to eat fruits and vegetables less than pregnant women can be attributed to ignorance among lactating women.

More than half of pregnant women, 78 (52%) reported that they were following cultural practices on nutrition while majority of lactating women, 112 (76.7%) reported that they were following cultural practices on nutrition. The reason for lactating women to follow cultural practices more than pregnant women can be attributed to the experience of cultural norms and beliefs among

lactating women. It can be attributed to the fact that things are changing and grannies are no longer available in many families like before and grannies were the cornerstone of cultural norms and beliefs.

5.4.1 KNOWLEDGE AND NUTRITION-RELATED PRACTICES

There was no positive significant association between nutritional knowledge and practices as shown. The knowledge of respondents was not in line with good nutritional practices.

5.4.2 SOCIO-DEMOGRAPHIC, ECONOMIC AND MODIFYING FACTORS

(HBM)

In this study, socio-demographic information was discussed as modifying factors that are bio-psychosocial, cultural and economic in nature. In terms of the HBM, modifying factors such as age, marital status and educational level could influence pregnant and lactating women's knowledge of nutrition during pregnancy and lactation. Younger unmarried women of low income and those who attained a low educational level are usually at risk of inadequate nutrition probably due to poverty in developing countries, resulting in low birth-weight babies who may have perpetual health problems (Ford, Weglicki, Kershaw, Schram, Hoyer & Jacobson 2014; Ajayi et al, 2015).

It is common among unmarried young women not to divulge that they are pregnant early as most of them are afraid of being accused of wrong. The findings revealed that information on employment status of the respondents was unemployment to more than half of the respondents and their spouses. These variables could affect early booking of ANC services, and early booking can benefit a pregnant woman because of the health education about better diet and best nutrition and its availability. The importance of such information is the fact that it provides developmentally appropriate and culturally oriented care (Cassata & Dallas, 2014). Socio-cultural and economic factors are closely associated with utilization of health care services

(Bellon et al, 2016). The majority of adolescent women are usually economically challenged; they lack social support and may not be able to make independent decisions on matters relating to their health. It is crucial that the healthcare providers establish these factors from the individual adolescent women during health assessment in order to be able to provide need-focused ANC.

5.5 SUMMARY

In this chapter, data was discussed. References were also made to the literature reviewed, where necessary. These findings were discussed and also include in the contributions within the framework of the HBM components. The findings revealed that certain modifying factors, individual perceptions and attitudes, socio-cultural and economic factors significantly influenced pregnant and lactating women's nutrition practices negatively making it a challenge to adhere to best practice in terms of nutrition. Generally, the results revealed lack of knowledge and poor practices among pregnant and lactating women who participated in this study.

CHAPTER 6

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS OF THE STUDY

6.1 INTRODUCTION

The previous chapter presented research results and interpretation. This chapter presents research findings, limitations and conclusions of the study. Health Believe Model guided the study. Self-Administered questionnaires were used for data collection in this study.

The research questions that guided the study were:

- What knowledge do pregnant and lactating women have regarding diet during pregnancy and lactation?
- What attitudes do pregnant and lactating women have regarding nutritional practices in pregnancy and lactation?
- What might be cultural practices that hinder best nutrition practices during pregnancy and lactation among women in Mopani district?

The study described the knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo Province, South Africa. The HBM guided the study on issues of health seeking behaviour, such as early booking or attendance of ANC because it provides an opportunity to empower pregnant women to recognize and respond to the signs and symptoms of obstetric complications.

Major concepts modify women's choices of visiting healthcare professionals for nutritional advise during ANC and postnatal to prevent any complications include demographic, socio-psychological and structural variables.

Personality factors can be positively or negatively associated with the practice of health behaviors whilst.

Efficacy indicates that the "effectiveness of a health services procedures such as ANC and postnatal services in preventing complications that might occur during pregnancy and lactation is the standard measure against which other care system like cultural nutritional practices in areas where they are still culturally anticipated to live (Chan, 2014).

Pregnancy is a high-risk situation because of these women' physical and psychological immaturity for reproduction (Reynolds et al, 2015). Various social factors such as culture, low literacy level, inadequate reproductive health knowledge and inadequate ANC attendance affect pregnant women 's health-seeking behaviors, which usually increases the chances of pregnancy-related complications and poor pregnancy outcomes (Matua 2014; Singh & Khare, 2015; Ziyani et al, 2015). The vulnerability of these pregnant woman to morbidity and mortality is increased if they delay initiating ANC or if they are engaged to poor nutrition diet if they do not attend ANC at all.

World Health Organization pronounces that proper nutrients and ANC has been identified as one of the pillars of safe motherhood (WHO, 2013) and it is considered to enhance good health for the mother and the fetus through identification of problems during pregnancy, management of those problems if possible or referring the women to the next level of healthcare as soon as possible. Despite all the encouragement made always by health authorities, some pregnant women failed to seek for health promotion, early booking for ANC for the sake of prevention of pregnancy complications, promotion of healthcare by eating healthy well-balanced diet. Probabilities are the fact that perceived susceptibility is the "individual's perception of the degree of his/her susceptibility to a health condition". It was found that 86% antenatal coverage

was reported in urban areas whilst 67% in rural areas. This could indicate that the women from rural area did not perceive themselves susceptible to any health complications like those in urban areas.

Poor knowledge on well-balanced diet and best practices was revealed. Maternal health statistics for 2016 revealed that a significant number of pregnant women and pregnant adolescents continued to practice taboos, such as eating soil and craving for unusual substances (Mashau, 2016).

6.2 STUDY METHODS

The study was on knowledge, attitudes and practices on nutrition among pregnant and lactating women in mopani district of Limpopo province, South Africa. Ethical clearance to conduct the study was granted by the University Higher Degree Committee of the University of Venda and Limpopo provincial Department of Health Research and Ethics Committee, sub-district managers of Vhembe district where the study focused were also given the permission from the provincial Department of Health. As many as 306 women who visited all the participating local clinics of Ba-Phalaborwa, pregnant and lactating women were told about the study and recruited to participate in the study. After signing a consent form, the respondents were given self-administered questionnaires to complete in front of the researcher in a side room which was prepared for the purpose. A questionnaire was administered to obtain data. The questionnaire was in English. However, respondents who could not read and write were assisted by the researcher to fill in the form.

6.3 OBJECTIVES

6.3.1 Objective 1

This objective aimed to explore knowledge on nutrition among pregnant and lactating women in Mopani district of Limpopo Province.

The respondents revealed their willingness to provide balanced nutrition to their both women and their babies, the majority 142 (94.6%) of the respondents reported that to provide good nutrients, a pregnant woman should eat well-balanced diet (see table 4.2) while among lactating women, 119 (76.3%) of the respondents reported that they provide good nutrients by eating well-balanced diet (see table 4.6). These results show that pregnant and lactating women were knowledgeable on the required nutrition for both, unborn baby and the neonate as well as the women.

6.3.2 Objective 2

This objective aimed to describe attitudes on nutrition among pregnant and lactating women in Mopani district of Limpopo Province.

As many as 30 (20%) of pregnant women reported they nutritional advice from the healthcare professionals was not important (see table 4.4) while 33 (21.2%) of lactating women reported they nutritional advice from the healthcare professionals was not important (see table 4.7). The results show that there is still a need for health care professionals to work together for the health awareness on nutrition among pregnant and lactating women.

6.3.3 Objective 3

This objective aimed to explain practices among pregnant and lactating women in Mopani district of Limpopo Province.

As many as 78 (52%) of the respondents reported the eating of soil during pregnancy. Eating soil during pregnancy were encouraged by elderly women of the family, since eating soil during pregnancy is often believed culturally to have an effect of providing energy to a pregnant woman (see table 4.5). However, soil is full of iron, but it can be detrimentally to both mother and unborn baby in the sense that both may be affected by clostridium tetani virus as well as constipation for the women. As indicated in the HBM, perceived threat depends on two beliefs: perceived susceptibility to illness or health breakdown and anticipated severity of the consequences of such illness (Conner, 2014). A dominant cultural belief was that a pregnant woman should not eat eggs to avoid a child to be born with no hair and it was reported by 18 (12%) of the respondents (see table 4.6). Thirty-four (21.8%) of lactating women reported that a lactating woman should eat a lot to gain weight and produce more milk, 31 (19.9%) of the respondents reported that warm pap helps the mother to produce more milk, 25 (16.0%) of the respondents believed that a lactating woman should eat “mutuku” to produce more milk while the minority of the respondents 22 (14.1%) believed that drinking tea helps the mother to produce more milk (see table 4.9). The results revealed that majority of pregnant women and lactating women are engaging in cultural practices on nutrition which may have negative impact on their health.

6.4 LIMITATIONS IDENTIFIED DURING THE STUDY

During the course of the study, some limitations were identified. The most significant limitations were as follows:

- Some of the respondents did not complete certain sections of the questionnaire. This resulted in the disturbances of the flow of data collection.

- Based on the area where the study focused in Mopani district, the results of this study may be generalized to all the PHC clinics within the entire province because the respondents showed similar practices in terms of nutrition and the provision of the well balance diet.
- This study was limited by the attitudes of the respondents who were not welcoming during the time of data collection. Respondents were more focused on ANC and postnatal consultations making it difficult for the researcher to collect data.

6.5 RECOMMENDATION OF THE STUDY

Based on the findings, the recommendations are provided below to address knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani District of Limpopo Province, South Africa:

- It is the responsibility of healthcare providers to educate pregnant and lactating women with regard to proper nutrition. When they have enough information, they will be able to take informed decision regarding nutrition during pregnancy and lactation.
- Recommendations to policy makers of Limpopo Province would be that information giving on knowledge, attitudes and practices on nutrition should double to pregnant and lactating women at the secondary level. The findings in table 4.1, show that 78 (52%) of pregnant women and 85 (54.5%) of lactating women's educational level was secondary. It is therefore of significance to recommend healthcare providers to put more effort on giving health information on nutrition at those at the secondary school level.
- Emphasis should be on to "early booking" as soon as a person is diagnosed pregnancy positive. According to the Guidelines for Maternity

Care in South Africa (2007), a woman is expected to visit her health care provider as soon as she suspects pregnancy, even as early as she missed her first menstrual periods. The health care provider will take a full and relevant history about the use of alcohol, tobacco and other substances, physical examination of maternal weight, height, systemic examination of breasts and other important aspects at first visit like eating habit (what to eat and what to avoid).

- There is need to foster teamwork among nurses and nutritionists working at the Reproductive Health department to improve the quality of maternal nutrition care.
- Maternal nutrition guidelines and reference materials accompanied by job aids should be made available and placed in critical areas where all nurses can refer and their use periodically monitored.
- Similar studies should be carried out in other health facilities within the country to establish the situation and generate more data that can be used to inform policy and development of standards of maternal nutrition care in South Africa.

6.6 RECOMMENDATIONS FOR FUTURE RESEARCH

While conducting the study, it was evident that further research might be required:

- Research on parents' involvement regarding nutrition during pregnancy and lactation to their children.
- Research on the impact of socio-economic status on the health of pregnant and lactating women.

- Research on the extent to which alcohol and tobacco contribute to poor dietary practices among pregnant and lactating women.
- Investigate on the causes of ignorance to comply with the health education given on nutrition from health care providers.

6.7 CONCLUSION

The study focused on knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani District of Limpopo Province, South Africa. The quantitative approach was applied using an exploratory and descriptive design. The researcher utilised questionnaires to collect data from the respondents. Pregnancy is a high-risk condition but the outcomes for both mother and baby could be enhanced if effective nutrition, best practices and early booking for ANC which is rendered from early in the first trimester of the pregnancy. This requires positive adherence to the adequate well balance nutrition and the pregnant and lactating women having proper knowledge for health promotion and the prevention of pregnancy complications. Pregnant women 's health should be assessed and correctly reported in the pregnant women's ANC files, and appropriate actions taken if any abnormality is detected. Knowledge deficit was also revealed among pregnant and lactating women of the diet they eat during pregnancy and in postpartum period.

It also requires that pregnant and lactating women be supported by family members and the healthcare professionals in terms of knowledge and practices of nutritional knowledge among the women. Pregnant women should have knowledge on about the advantages of early booking of ANC services, how and where to access these services and be able to afford the costs the diet health professional advice women to eat thereof. These ideals could only become achievable in South Africa if the health professionals can

embark on campaigns about the advantages of well-balanced diet during pregnancy, the importance of early booking of ANC where health education lectures are provided by midwives for the benefits of the pregnant women and their fetuses. Health care personnel should accommodate pregnant and lactating women' specific needs at the ANC services. The study also revealed pregnant and lactating women whose pregnancy seem to be rejected by the boyfriends; however, this variable was not persuaded since it was not the focus of this study.

It is the responsibility of the health care professionals and the communities to teach all women, but specifically adolescents, about contraceptives and providing contraceptive services free of charge could help to reduce the number of unplanned pregnancies in in the whole South Africa. Most maternal deaths and many neonatal deaths are preventable, if adequate early ANC, well balanced diet and effective obstetric services are provided. Failure to adhere to proper nutrition, early ANC services, and best practices could become life-threatening crises for both the mother and baby by the time they are diagnosed. The death of a pregnant woman is a tragic occurrence and "... one of the most terrible ways to die ... an event that could have been avoided and should never have been allowed to happen" (Mashau, 2016).

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8 ANNEXURES

Annexure A: PERMISSION LETTER TO THE CLINIC

P.O Box 1718

Mutale

0956

To the manager in charge

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT A RESEARCH

I am a Masters student at the University of Venda. The title of my research is **“Knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo Province, South Africa”**.

I am requesting permission to conduct a study your area of charge. The purpose of the study is to describe knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district.

The study will be of the benefit to primary health care and will provide data to policy makers and pregnant and lactating women will be more knowledgeable with their role concerning diet during pregnancy and lactation.

Participation is voluntary and anonymity of respondents will be maintained and guaranteed.

Yours faithfully

Mr Nemutanzhela B (0721910190)

Signature: _____

Supervisor's signature: _____

Annexure B: PERMISSION LETTER TO THE HEAD OF DEPARTMENT

P.O Box 1718

Mutale

0956

The Head of Department

Department of Health

Polokwane

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT A RESEARCH

I am a Masters student at the University of Venda. The title of my research is **“Knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo Province, South Africa”**.

I am requesting permission to conduct a study your area of charge. The purpose of the study is to describe knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district.

The study will be of the benefit to primary health care and will provide data to policy makers and pregnant and lactating women will be more knowledgeable with their role concerning diet during pregnancy and lactating period.

Participation is voluntary and anonymity of respondents will be maintained and guaranteed.

Yours faithfully

Mr Nemutanzhela B (0721910190)

Signature: _____

Supervisor's signature: _____

Annexure C: INFORMED CONSENT

CONSENT FORM FOR PARTICIPATING IN THE STUDY

My name is Nemutanzhela B, a post-graduate student at the University of Venda. I am conducting a research titled **‘Knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo Province, South Africa.**

I would like you to participate in this study. Information obtained from you will be treated as confidential. Your participation in this study is voluntary and your decision to take part in this study will have no negative impact on your life or health.

Researcher’s signature: _____ Date: _____

Participant

I _____ have read the content of this form and hereby voluntarily consent to participate in this study.

Participant’s signature: _____ Date: _____

For more information contact Nemutanzhela B. (Researcher) - 0721910190

Annexure D: QUESTIONNAIRES

QUESTIONNAIRE A: PREGNANT WOMEN

Knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo province, South Africa

Answer each question by placing an "x" in the appropriate box or write down your response in the space provided.

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

| | | OFFICE USE |
|--|---|---------------|
| 1. How old are you? | <input type="text"/> <input type="text"/> YEARS | |
| 2. Can you read and write? | | |
| 2.1 Yes | | |
| 2.2 No | | |
| 3. Highest level of Education obtained? | | |
| 3.1 None | | |
| 3.2 Primary | | |
| 3.3 Secondary | | |
| 3.4 Tertiary | | |
| 4. Religion? | | |
| 4.1 Muslim | | |
| 4.2 Buddhism | | |
| 4.3 Hindu | | |
| 4.4 Christianity | | |
| 4.5 other (specify) | | |
| 5. Ethnic Group? | | |
| 5.1 Tsonga | | |
| 5.2 Venda | | |
| 5.3 Pedi | | |
| 5.4 Sotho | | |
| 6. Marital status? | | |
| 6.1 Single | | |
| 6.2 Married | | |
| 6.3 Divorced | | |
| 6.4 Widow | | |
| 7. Your occupation? | | |
| 7.1 Employed | | |
| 7.2 Unemployed | | |
| 8. Your Husbands Occupation? | | |
| 8.1 Employed | | |
| 8.2 Unemployed | | |
| 9. Family size | | |

| | | |
|--|--|--|
| 9.1 Two | | |
| 9.2 Three | | |
| 9.3 Four | | |
| 9.4 Five and above | | |
| 10. Your sources of food | | |
| 10.1 Purchasing in the market | | |
| 10.2 Garden | | |
| 10.3 Farm | | |
| 11. Your main sources of water for domestic use | | |
| 11.1 Own tap | | |
| 11.2 Community tap | | |
| 11.3 Borehole | | |
| 11.4 River | | |
| 11.5 Other (specify)..... | | |

SECTION B: KNOWLEDGE ON NUTRITION

| | OFFICE USE |
|---|------------|
| 12. How do you eat to provide good nutrition to yourself and the baby? | |
| 12.1 Eat more fats | |
| 12.2 Eat always | |
| 12.3 Eat balanced diet | |
| 12.4 Don't know | |
| 13. What is a balanced diet? | |
| 13.1 Eating everything that looks healthy | |
| 13.2 Eating proper nutrients for good health | |
| 13.3 Eating fruits and vegetables | |
| 13.4 Don't know | |
| 14. Choose three foods to avoid during pregnancy? | |
| 14.1 Alcohol | |
| 14.2 Milk | |
| 14.3 Unwashed vegetables | |
| 14.4 Caffeine | |
| 13.5. Beans | |
| 13.6. Don't know | |
| 15. In your own view, is it healthy to drink alcohol during pregnancy? | |
| 15.1 Yes | |
| 15.2 No | |
| 15.3 Don't know | |
| 16. If no, choose three risks of drinking alcohol during pregnancy? | |
| 16.1 Weight gain | |
| 16.2 Miscarriage | |
| 16.3 Infant death | |
| 16.4 Premature birth | |
| 16.5 Cancer | |
| 16.6 Don't know | |
| 17. In your own view, is it healthy to smoke during pregnancy? | |
| 17.1 Yes | |
| 17.2 No | |
| 17.3 Don't know | |

| | | |
|---|--|--|
| 18. If no, choose risks of smoking during pregnancy? | | |
| 18.1 Low birth weight | | |
| 18.2 Still birth | | |
| 18.3 Obesity | | |
| 18.4 Diarrhea | | |
| 18.5 Baby's learning disorder | | |
| 18.6 Don't know | | |
| 19. Assuming that a pregnant woman is eating soil, what might be the risk? | | |
| 19.1 Miscarriage | | |
| 19.2 Weight gain | | |
| 19.3 Anaemia | | |
| 19.4 Don't know | | |
| 20. What might happen if a pregnant woman eats food not rich in vitamins and minerals? | | |
| 20.1 Loss of appetite | | |
| 20.2 Tiredness | | |
| 20.3 Malnutrition | | |
| 20.4 Don't know | | |

SECTION C: ATTITUDES ON NUTRITION

| | | |
|--|--|-------------------|
| | | OFFICE USE |
| 21. Is it possible to eat balance diet? | | |
| 21.1 Yes | | |
| 21.2 No | | |
| 21.3 Don't know | | |
| 22. Is it true that eating soil as the solution of soil-craving during pregnancy? | | |
| 22.1 Yes | | |
| 22.2 No | | |
| 22.3 Don't know | | |
| 23. Is it wrong to drink alcohol during pregnancy? | | |
| 23.1 Yes | | |
| 23.2 No | | |
| 23.3 Don't know | | |
| 24 Is it wrong to smoke during pregnancy? | | |
| 24.1 Yes | | |
| 24.2 No | | |
| 24.3 Don't know | | |
| 25. Is it important to follow the advice of healthcare provider on nutrition? | | |
| 25.1 Yes | | |
| 25.2 No | | |
| 25.3 Don't know | | |
| 26. Is it necessary to take iron supplements and folic acid during pregnancy? | | |
| 26.1 Yes | | |
| 26.2 No | | |

| | | |
|--|--|--|
| 26.3 Don't know | | |
| 27. Is it necessary to eat every time they feel like eating during pregnancy? | | |
| 27.1 Yes | | |
| 27.2 No | | |
| 27.3 Don't know | | |
| 28. Is it possible to change diet because one is pregnant? | | |
| 28.1 Yes | | |
| 28.2 No | | |
| 28.3 Don't know | | |

SECTION D: PRACTICES ON NUTRITION

| | | OFFICE USE |
|--|--|------------|
| 29. Do you follow the advice of healthcare provider on nutrition? | | |
| 29.1 Yes | | |
| 29.2 No | | |
| 29.3 Don't know | | |
| 30. If yes, how often do you follow the advice? | | |
| 30.1 Everyday | | |
| 30.2 Always | | |
| 30.3 Sometimes | | |
| 30.4 Not sure | | |
| 31. Do you eat fruits and vegetables? | | |
| 30.1 Yes | | |
| 30.2 No | | |
| 30.3 Don't know | | |
| 31. If yes, how often do you eat fruits and vegetables? | | |
| 31.1 Everyday | | |
| 31.2 Always | | |
| 31.3 Sometimes | | |
| 31.4 Not sure | | |
| 32. Are you drinking alcohol during pregnancy? | | |
| 32.1 Yes | | |
| 32.2 No | | |
| 33. If yes, how often do you drink alcohol? | | |
| 33.1 Everyday | | |
| 33.2 Always | | |
| 33.3 Sometimes | | |
| 34. Are you following any cultural practices on nutrition? | | |
| 34.1 Yes | | |
| 34.2 No | | |
| 34.3 Don't know | | |
| 35. If yes, explain that cultural practices? | | |
| ----- | | |
| ----- | | |
| ----- | | |
| ----- | | |

| | |
|-------------------------|--|
| ----- ----- ----- | |
|-------------------------|--|

THANK YOU FOR YOUR PARTICIPATION

QUESTIONNAIRE B: LACTATING WOMEN

Knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani district of Limpopo province, South Africa

Answer each question by placing an "x" in the appropriate box or write down your response in the space provided.

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

| | | OFFICE USE |
|--|---|---------------|
| 1. How old are you? | <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> | |
| | YEARS | |
| 2. Can you read and write? | | |
| 2.3 Yes | | |
| 2.4 No | | |
| 3. Highest level of Education obtained? | | |
| 3.1 None | | |
| 3.2 Primary | | |
| 3.5 Secondary | | |
| 3.6 Tertiary | | |
| 4. Religion? | | |
| 4.1 Muslim | | |
| 4.2 Buddhism | | |
| 4.3 Hindu | | |
| 4.4 Christianity | | |
| 4.5 Other (specify) | | |
| 5. Ethnic Group? | | |
| 5.1 Tsonga | | |
| 5.2 Venda | | |
| 5.3 Pedi | | |
| 5.4 Sotho | | |
| 6. Marital status? | | |
| 6.1 Single | | |
| 6.2 Married | | |
| 6.3 Divorced | | |
| 6.4 Widow | | |
| 7. Your occupation? | | |
| 7.1 Employed | | |
| 7.2 Unemployed | | |
| 8. Your Husbands Occupation? | | |
| 8.1 Employed | | |
| 8.2 Unemployed | | |
| 9. Family size | | |
| 9.1 Two | | |
| 9.2 Three | | |
| 9.3 Four | | |
| 9.4 Five and above | | |

| | | |
|--|--|--|
| 10. Your sources of food | | |
| 10.1 Purchasing in the market | | |
| 10.2 Garden | | |
| 10.3 Farm | | |
| 11. Your main sources of water for domestic use | | |
| 11.1 Own tap | | |
| 11.2 Community tap | | |
| 11.3 Borehole | | |
| 11.4 River | | |
| 11.5 Other (specify)..... | | |

SECTION B: KNOWLEDGE ON NUTRITION

| | | OFFICE USE |
|---|--|------------|
| 12. How do you eat to provide good nutrition to yourself and the baby? | | |
| 12.1 Eat more fats | | |
| 12.2 Eat always | | |
| 12.3 Eat balanced diet | | |
| 12.4 Don't know | | |
| 13. What is a balanced diet? | | |
| 13.1 Eating everything that looks healthy | | |
| 13.2 Eating proper nutrients for good health | | |
| 13.3 Eating fruits and vegetables | | |
| 13.4 Don't know | | |
| 14. Is it healthy for a lactating woman to eat any food? | | |
| 14.1 Yes | | |
| 14.2 No | | |
| 14.3 Don't know | | |
| 15. If no, choose three foods to avoid during lactation? | | |
| 15.1 Fish | | |
| 15.2 Milk | | |
| 15.3 Garlic | | |
| 15.4 Species | | |
| 15.5 Lemon | | |
| 15.6 Don't know | | |
| 16. How do you eat to gain weight? | | |
| 16.1 Eat foods with more fats | | |
| 16.2 Eat many times per day | | |
| 16.3 Eat foods rich with vitamins and minerals | | |
| 16.4 Don't know | | |
| 17. Where do you get nutritional information? | | |
| 17.1 Clinic and health officers | | |
| 17.2 Relatives | | |
| 17.3 Friends | | |
| 17.4 Books | | |
| 17.5 Media | | |
| 17.6 Don't know | | |

SECTION C: ATTITUDES ON NUTRITION

| | | OFFICE USE |
|--|--|------------|
| 18. Is it possible to eat balance diet? | | |
| 18.1 Yes | | |
| 18.2 No | | |
| 18.3 Don't know | | |
| 19. Is it important to follow the advice of healthcare provider on nutrition? | | |
| 19.1 Yes | | |
| 19.2 No | | |
| 19.3 Don't know | | |
| 20. Is it necessary to eat every time you feel like eating? | | |
| 21.1 Yes | | |
| 21.2 No | | |
| 21.3 Don't know | | |
| 22. Is it possible to change diet because one is lactating? | | |
| 22.1 Yes | | |
| 22.2 No | | |
| 22.3 Don't know | | |
| 23. Do you eat different types of foods during meals? | | |
| 23.1 Yes | | |
| 23.2 No | | |
| 23.3 Don't know | | |
| 24. Are you able to eat enough food required during lactation? | | |
| 24.1 Yes | | |
| 24.2 No | | |
| 24.3 Don't know | | |

SECTION D: PRACTICES ON NUTRITION

| | | OFFICE USE |
|--|--|------------|
| 25. Do you follow the advice of healthcare provider on nutrition? | | |
| 25.1 Yes | | |
| 25.2 No | | |
| 25.3 Don't know | | |
| 26. If yes, how often do you follow the advice? | | |
| 26.1 Everyday | | |
| 26.2 Always | | |
| 26.3 Sometimes | | |
| 26.4 Not sure | | |
| 27. Do you eat balanced diet? | | |
| 27.1 Yes | | |
| 27.2 No | | |
| 27.3 Don't know | | |
| 28. If yes, how often do you eat balanced diet? | | |
| | | |

| | | |
|---|---|--|
| 28.1 Everyday | | |
| 28.2 Always | | |
| 28.3 Sometimes | | |
| 28.4 Not sure | | |
| 29. Do you eat fruits and vegetables? | | |
| 29.1 Yes | | |
| 29.2 No | | |
| 29.3 Don't know | | |
| 30. If yes, how often do you eat fruits and vegetables? | | |
| 30.1 Everyday | | |
| 30.2 Always | | |
| 30.3 Sometimes | | |
| 30.4 Not sure | | |
| 31. Are you following any cultural practices on nutrition? | | |
| 31.1 Yes | | |
| 31.2 No | | |
| 31.3 Don't know | | |
| 32. If yes, explain that cultural practices? | <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> | |

THANK YOU FOR YOUR PARTICIPATION

Annexure E: ETHICAL APPROVAL FROM UNIVERSITY OF VENDA

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:

Mr B Nemutanzhela

Student No:

11601537

PROJECT TITLE: Knowledge, attitudes and practices on nutrition among pregnant and lactating women in Mopani District of Limpopo Province, South Africa.

PROJECT NO: SHS/17/PDC/48/3001

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

| NAME | INSTITUTION & DEPARTMENT | ROLE |
|---------------------|--------------------------|------------------------|
| Prof ML Netshikweta | University of Venda | Supervisor |
| Dr A DE Villers | Medical Research Council | Co - Supervisor |
| Ms TA Masla | University of Venda | Co - Supervisor |
| Mr B Nemutanzhela | University of Venda | Investigator – Student |

ISSUED BY:

UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: February 2018

Decision by Ethical Clearance Committee Granted

Signature of Chairperson of the Committee:

Name of the Chairperson of the Committee: Senior Prof. G.E. Ekosse




University of Venda

PRIVATE BAG X5055, THOHAYANDOU, 0950, LIMPOPO PROVINCE, SOUTH AFRICA
TELEPHONE (015) 962 8504/8313 FAX (015) 962 9080

"A quality driven financially sustainable, rural-based Comprehensive University"



Annexure F - DECLARATIONS BY LANGUAGE AND TECHNICAL EDITORS



STEVENS EDITING AND PROOFREADING ~ EDITING ~ PROOFREADING ~ WRITING ~

BA: English; Industrial psychology (Unisa)

Sole Proprietor

Membership:

PEG (SA)

SfEP (UK-Intermediate)

IPEd (WA)

20 May 2019

THIS IS TO CERTIFY THAT:

I have language edited a thesis titled *Knowledge, attitudes and practices among pregnant and lactating women in Mopani District of Limpopo province, South Africa.*

for Mr Nemutanzhela Blondie, E-mail: nemutanzhelab@gmail.com, a Masters student in Health studies at the University of Venda, South Africa. The scope of my editing comprised:

- Spelling
- Vocabulary
- Word usage
- Checking of referencing style
- Tense
- Punctuation
- Language and sentence structure

It has been a gratifying experience working with this student who has clearly displayed integrity in a well-prepared paper and prompt communication with the editor when necessary.

My best wishes for good success and a great career accompany Mr Nemutanzhela B.

Yours faithfully,

Charlotte Stevens (Ms)

Stevens Editing and Proofreading

e: ajc.stevens@gmail.com

[Note: Signature withheld for security purposes.]

Annexure G - PERMISSION FROM LIMPOPO PROVINCIAL DEPARTMENT OF HEALTH



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Enquiries: Latif Shamia (015 293 6653)

Ref:4/2/2

University of Venda
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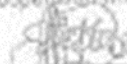
Greetings,

RE: Nutritional knowledge, attitudes and practices among pregnant and lactating women of Mopani district in Limpopo Province, South Africa.

The above matter refers.

1. Permission to conduct the above-mentioned study is hereby granted.
2. Kindly be informed that:-
 - Research must be loaded on the NHRD site (<http://nhrd.hsi.org.za>) by the researcher.
 - Further arrangement should be made with the targeted institutions, after consultation with the District Executive Manager.
 - In the course of your study there should be no action that disrupts the services.
 - After completion of the study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
 - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
 - The above approval is valid for a 3 year period.
 - If the proposal has been amended, a new approval should be sought from the Department of Health.
 - Kindly note, that the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated.


Head of Department

14/12/2016
Date