FACTORS CONTRIBUTING TO THE DEVELOPMENT OF DEHYDRATION AMONG UNDER FIVE YEARS CHILDREN WITH DIARRHOEA IN THULAMELA B CLINICS, VHEMBE DISTRICT

BY

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Declaration

I, Azwinndini Ndou **(**11554580), declare that the dissertation titled "**Factors contributing to the development of dehydration among under five children with diarrhoea in Thulamela B Clinics, Vhembe District",** is my own work and that it has not been submitted to this or any other institution for any other degree and that all the sources that have been used are acknowledged by means of complete references.

. Date ……..

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Student Number 11554580

Dedication

This research project is dedicated to my mom Mrs Muthuhadini Muofhe Mamagau and my three handsome sons Thonifho Respect, Phindulo Answered and Thabelo Ndou for such a wonderful support, motivation and encouragement, you are the true love of my heart and my four angels who demonstrated love, motivation and believing in me that one day I will make it happen. This was also done in memory of my one and only beloved late husband, Mr Ntshengedzeni Petrus Ndou and my late true father of his only daughter Mr Pandeani Solomon Mamagau. Guys, I know that the two of you, where your spirits are, are being with us, giving us power to move forward and hoping to meet you one day in heaven.

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Abstract

Diarrhoea is a major public health problem in Nepal as evident from its increasing incidence and fatality Unlike other diseases, diarrhoea is generally not considered as an illness and, thus most diarrheal cases are either not managed at all or managed at home through traditional approaches. The main purpose of this study is to assess factors contributing to the development of dehydration amongst under five children with diarrhoea in Thulamela B clinics. A quantitative approach using descriptive cross sectional survey design will be conducted among 487 mothers to be conveniently selected from purposively selected three Clinics in Thulamela B area. A self-administered closed-ended questionnaire will be used to collect the data for the study and the validity of the instrument will be ensured and, the development of the instrument will be guided by a wide range of literature and the inputs of experts. The instrument will be test-retested for reliability and the responses will be compared using Cronbach's alpha. Data will be captured and coded into a computer using Microsoft Excel 2013 and will be analysed using Statistical Package for Social Scientists (SPSS) version 22.0. Descriptive statistics will be used to analyse and association will be tested through cross tabulation chi-square and the results will be presented in tables and charts. Envisaged results will reveal the level of knowledge, attitudes and practices of mothers of under five children regarding dehydration and childhood diarrhoea. The study findings will therefore be significance in assisting successful recommendations to be identified.The study concludes that even though respondents were knowledgeable about the disease, and were aware about some of its causes; their overall practices can expose their children to diarrheal diseases. The study recommends that the Department of Health conduct awareness campaigns to teach mothers how to manage diarrhoea. Nurses at the PHCs should all be trained on the use of IMCI strategies so that they may communicate appropriate information and skills to mothers on identification of early signs of dehydration, its complications and appropriate diarrhoea management knowledge, practices and skills. The Department of Health must appoint IMCI coordinators in each local area so that they may supervise, do follow ups after IMCI trainings, do support visits on monthly basis and emphasize IMCI strategies to be implemented in all Primary Health Care facilities (PHC).

Key words: Attitude, Child, Dehydration, Diarrhoea. Factors, Knowledge, Mother and Practice

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LIST OF ACRONYMS

CDC	Centre for Disease Control and Prevention
DHIS	District Health Information System
DoH	Department of Health
HCS	Health Care System
HIV	Human Immune Deficiency Syndrome
IMCI	Integrated Management of Childhood Illness
KAP	Knowledge Attitude and Practice
MDGs	Millennium Developmental Goals
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
PCA	Principal Component Analysis
PHC	Primary Health Care
SPSSS	Statistical Package for Social Sciences
SSS	Salt Sugar Solution
UHDC	University Higher Degree Committee
UNICEF	United Nations Children's Education Fund
WHO	World Health Organisation

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CHAPTER 1

Introduction and Background of the study

1.1 Introduction

Diarrheal infection is one of the most frequent, but preventable childhood illnesses. It is among the common causes of child-related-hospitalisation in developing countries such as South Africa. Dehydration occurs when one's body does not have as much water and fluids as required. It is "classified as mild, moderate or severe, based on how much of the body's fluid is lost and not replenished" (Lambert, *et al*., 2015). It must be noted that severe dehydration is one of the life-threatening phenomena to humankind, especially to children, the old-aged as well as people with chronic illnesses. It is worth noting that there are various factors and varying diseases that cause dehydration in the human body, and consequences are dire and include impairing water homeostasis in the body. The risk factors associated with dehydration include, but are not limited to, exerting oneself in hot and humid weather, living in places of high altitude, endurance-related sporting activities and people living with chronic illnesses (UNICEF, 2014). Among the elderly, blunted response to thirst and/or inability to access free water in the face of excessive bodily-fluid losses (especially hyperglycaemia related ones) seem to be the main causes of dehydration. Excess free water or hypotonic water usually result in any of the following: sensible loss of water through osmosis, sweating, vomiting and diarrhoea and insensible water loss, which occurs mainly through the skin and respiratory tract (Hoffman, 2015).

1.2 Background to the study

A study by Sutariya, Talsania and Shah (2011) on the global prevalence of diarrhoeal diseases amongst the under-five population reports that 541 children affected by diarrhoeal diseases were infants, and the number of diarrhoeal episodes per child per year was 4.76, which was higher than 2.97, observed in the 1-5 year age range. Sutariya *et al.* (2011) further observed that half of the diarrhoeal outbreaks occurred during the monsoon season, with high outbreaks in summer and low ones in winter. Their study also revealed that high episodes were treated at home, while a few consulted doctors. Fuller, Clasen, Heijnen and Eisenberg (2014) attest to the fact that since the adoption of the Millennium Development Goals (MDGs), access to improved sanitation has increased around the globe. Around 2.4 billion people in the world did not have access to sanitation, while 761 million people relied on public or other shared sanitation facilities (Fuller *et al*., 2014).

It is also noted that Sub-Sahara Africa has the lowest rate of access to safe water by its people, compared with other regions in the world. On average, less than half of the schools in Southern Africa, for example, have adequate water facilities (Fuller, *et al*., 2014). Shah, Odoyo, Wandera, Kathiiko, Bundi, Miringu, Guyo, Komoto, Nyangao, Karama and Tsuji (2017) argue that despite substantial reduction in child mortality from 2000 - 2010 globally, acute diarrhoea remains the second leading cause of death among children under five years. It is estimated that globally, 800 000 children under the age of five die annually, particularly in Sub-Sahara Africa and South Asia ,United nation children 's education fund (UNICEF, 2014). In sub-Sahara Africa, urban migration has increased, resulting in the rapid expansion of cities and creation of overcrowded urban slums. This has invariably resulted in poor social and economic conditions, poverty, illiteracy, inadequate safe drinking water, poor sanitation and malnutrition among young children.

Consequently, these social ills have raised the rate of infectious diseases such as diarrhoea amongst those less than five years old. Furthermore, a study by Lanata, Fischer-Walker, Olascoaga, Torres, Aryee and Black (2013) estimates that diarrhoea accounted for 9,9% of the 6,9 million deaths among children under the age of five in 2011. In South Africa, diarrhoea is currently the third leading cause of death among children less than five years old despite the success of early diarrhoea-control programs and updated World Health Organization (WHO) guidelines. "Many children under the age of five do not receive adequate treatment during a diarrhoea outbreak.

Recent reports indicate that only 40% of children suffering from diarrhoea worldwide receive oral rehydration or increased fluid intake (with continued feeding as part of diarrhoea management as well) (United Nations Children's Fund, 2013). General global unchanged rates of the use of oral rehydration solutions over the past two decades have been linked to the diversion of international funding toward malaria and Human Immune Virus /Acquired Immune Deficiency Syndrome (HIV/AIDS) after the incorporation of diarrhoea-control programs into the Integrated Management of Childhood Illness approach" (IMCI) (Lanata *et al.*, 2014).

Masiha *et al*. (2015) attribute the slight decline in diarrhoea related illnesses in developing countries such as South Africa to the use of early and appropriate oral rehydration therapy (ORT), with oral rehydration solution (ORS), improved nutrition and water sanitation as its main components. Diallo, Cong, Henderson and McGrath (2017) postulate that ORT has prevented more than 50 million child deaths in the last 25 years. Despite its significance in the prevention and treatment of diarrhoea among children under five years, the use of ORT still

remains low in South Africa, particularly in Limpopo's rural areas. Dehydration undermines the body's resistance to disease. It viciously depreciates the nutritional status of children under five (Dlamini, 2010). Some mothers are not aware of ORT modalities such as "how to prepare it correctly and why it should be used as an initial home-based intervention for acute diarrhoea. The problem is compounded by lack of a well-coordinated approach in terms of policy on how to get ORT information across to patients who visit health facilities in the Thulamela B Municipality. Given this dilemma in policy, the following section provides the study's problem statement.

1.3 Problem Statement

Despite the use of IMCI strategies by nurses in advising and teaching mothers on the use of the Salt and Sugar Solution (SSS), dehydration accompanying diarrhoea remains one of the leading causes of hospital admissions, morbidity and mortality among under five-year old children. About 216 diarrhoeal cases (with severe dehydration) were reported by the Primary Health Care (PHC) facilities in Thulamela B Municipality for the year 2014 /2015 and 196 in the year 2015/ 2016 reported from the District Health Information System (DHIS, 2015/ 2016). However, factors leading to such dehydration cases are not clear. This study's problem lies in the unclear factors that contribute towards development of dehydration amongst under-five year old children suffering from diarrhoea in Thulamela B Clinics.

1.4 Rationale for the Study

To effectively prevent dehydration among children with diarrhoea, it is crucial that all the risk factors contributing to the development of dehydration are clearly identified through research. Even though there are various studies conducted to describe the epidemiology of diarrhoeal diseases among children less than five years old, no known study has been conducted to identify factors that contribute to the development of dehydration amongst under five year old children who suffer from diarrhoea in Thulamela B Clinics. The identification of such risk factors would help local health-care centres reduce the morbidity and mortality rates due to diarrhoea among young children in the area.

1.5 Purpose of the study

This study was aimed at determining knowledge, attitude and practices of mothers, caregivers and guardians regarding diarrheal conditions and describes factors contributing to the development of dehydration amongst children less than five years old who suffer from diarrhoea in Thulamela B Clinics.

1.6 Research questions

The study answered the following main research question:

- What factors contributed to the development of dehydration amongst children less than five years old who suffer from diarrhoea in Thulamela B Municipality?

To help answer the main question, the study also answered the following secondary questions:

- What was the level of knowledge of mothers, caregivers and guardians of children under five years about the causes of dehydration?
- How did mothers viewed the use of SSS as a means of oral rehydration for children with diarrhoea?
- How did mothers prevent dehydration among children less than five years old suffering from diarrhoea?

1.7 Study objectives

(i) To assess the level of knowledge mothers have regarding the causes of dehydration among children under five years suffering from diarrhoea.

(ii) To determine the attitude of mothers towards use of SSS as a means of oral rehydration for children with diarrhoea.

(iii) To describe caregivers', mothers' and guardians' practices on the prevention of the development of dehydration among children under the age of five with diarrhoea.

(iv) To establish factors that contribute to the development of dehydration amongst children less than five years of age who suffer for diarrhea.

1.8 Significance of the study

The findings from this study were contributed to the existing body of knowledge regarding the causes of dehydration among children less than five years old with diarrhoea who live in the areas served by Thulamela B Clinics. The findings from this study were useful to stakeholders such as, among others, the Vhembe District Health Management and the Ministry of Health in the development and implementation of national and institutional guidelines regarding the use of SSS and other remedies in combating the development and effects of dehydration among the under five-year-old children. The study will also serve as a springboard for further research in the same line. The study will contribute immensely in curbing the mortality rate amongst children under the age of five years as their mothers will be able to know how best to treat and manage diarrheal sickness. The same can be said of the mothers and guardians of children, as they will know what they need to have and adopt when nurturing children under the age of five. This will in turn benefit the economy immensely in the sense that less financial support

will be channeled towards curbing the scourge of diarrheal sickness. If this study results and recommendations are efficiently shared and disseminated, both primary health and health education will improve thereby improving the livelihoods and health of children under the age of five children.

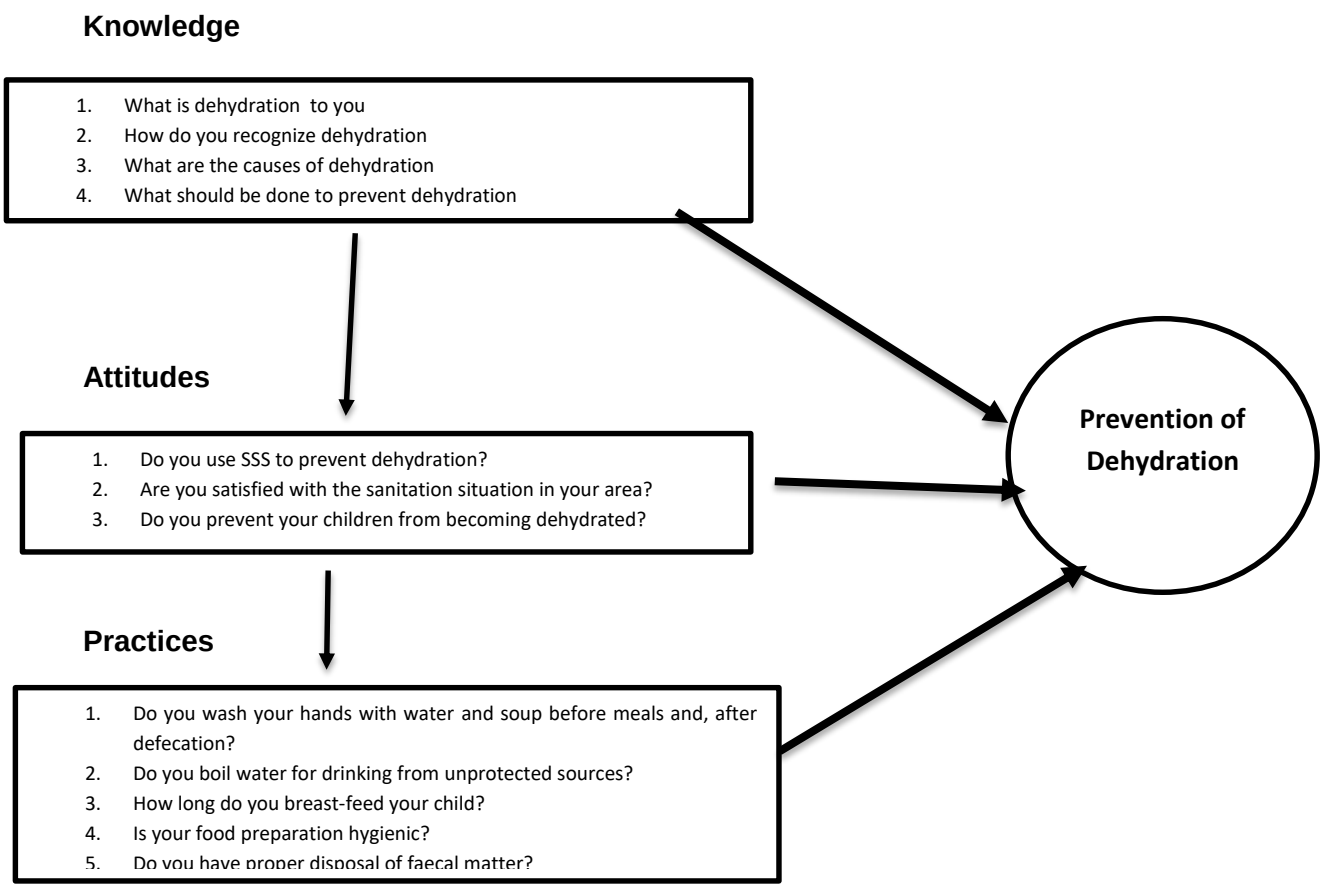
1.9 The Study's Theoretical Foundation

The Knowledge, Attitude and Practice (KAP) model used by Khan, Sarrif and Maully (2014) was adopted as the theoretical foundation that informs this study. A KAP survey is a quantitative method that provides access to quantitative information. The KAP model was used because of its quality in changing people's attitudes towards health interventions. The theory posits that the type of information or knowledge is directly proportion to its practices. The KAP survey reveals misconceptions or misunderstandings that may present obstacles to activities that need to be implemented and the potential barriers to behaviour change. It should be noted that a KAP survey records an "opinion" and is based on the "declarative" (that is, statements)". In other words, the KAP survey reveals what is said, yet there may be considerable gaps between what is said and what is done. This theory was applied as the main purpose was to determine knowledge, attitude and practices of mothers, caregivers and guardians regarding diarrheal conditions and describes factors contributing to the development of dehydration amongst children less than five years old who suffer from diarrhoea in Thulamela B Clinics.

A KAP Model

- Measures the extent of a known situation, confirm or disprove a hypothesis and provides new tangents of a situation's reality.
- Enhances knowledge, attitude and practices of specific themes and identifies what is known and done about various health-related subjects.
- Establishes the baseline (reference value) for use in future assessments and helps measure the effectiveness of health education activities' ability to change health-related behaviours.
- Suggests an intervention strategy that reflects specific local circumstances and cultural factors that influence them and plans activities suited to the respective population involved.

This study was, thus, shaped by this KAP model, and the objectives, literature review and data collection instruments are aligned to it.



Source: Khan, Sarrif and Maully (2014)

Figure 1.9.1 The KAP survey on the prevention of diarrhoea

1.10 Definitions of Terms

Child: In terms of the Children's Act (Act No. 38 of 2005) any person under the age of five, who lives within Thulamela B Municipality.), a child is a person under the age of eighteen (18) years. For the purpose of this study, a child is

Diarrhoea: The frequent passage of unformed, loose or watery stools, usually three or more times in 24 hours" (Berkow, Beers & Fletcher, 2007). For the purpose of this study, WHO's (2014) definition of diarrhoea was adopted. WHO defines diarrhoea as a "condition of having at least three loose or liquid bowel movements each day". It often lasts for a few days and can result in dehydration due to excessive fluid loss. In this study, diarrhoea is referred to as passing of watery stools three or more times in 24 hours.

Dehydration: A condition that occurs when loss of body fluids, mostly water, exceeds the amount taken in. Through dehydration, more water moves out of our cells and bodies than what we take into our bodies (Lamberti, Walker, Taneja, Mazumder & Black, 2015). In this study, dehydration is defined as total deficit of body water wherein free water exceeds water intake as a result of a disease.

Factors: These are circumstances, facts or influences that contribute to a condition that helps produce or influence a result (Oxford Dictionary, 2013). In this study, factors refer to mothers' knowledge, attitudes and practices of caring for diarrhoeal children.

Knowledge: A fact, information or skills acquired through experience or education (Nibabe, 2014). In the case of this study, knowledge includes mothers' abilities to recognise dehydration, how and when to apply SSS and other preventive measures to a diarrhoeal case.

Attitude: This means a human degree of like or dislike, usually informed by one's perceptions towards something. An attitude might be positive or negative (Westerly, 2012). In this study, attitude implies the mothers' feelings towards their under-five year old children who suffer from diarrhoea. Such feelings may include, *inter alia*, their views and judgment towards the prevention of dehydration through the use of SSS.

Practices: These are observable actions of an individual in response to a stimulus. These deal with repeated exercises or performance of something in a habitual manner. In this study, *practice* refers to the frequency of the application of SSS and proper sanitary measures by mothers of children less than five years who suffer from diarrhoea (Nibane, 2014).

Mother: A woman in a relation to a child to whom she has given birth. For the purpose of this study, a mother is any person who brought the child to the clinic for consultation.

1.11 Conclusion

In this chapter, factors that are contributing to the development of dehydration among under five children with diarrhoea are highlighted as part of the introduction and background of the study. The aim, objectives, significance as well as the definition of concepts used in this study were also provided.

The theoretical foundation of the study was also provided. Chapter two will provide the literature review of the study and discusses further issues pertaining to factors that contribute to the development of dehydration among under five children.

1.12. Chapter division in the study

Chapter 1 provides introduction and background of the study as well as the theoretical framework.

Chapter 2 presents literature review related to the study, and factors that contribute to the development of dehydration among under five children.

Chapter 3 provides the research design and research methodology of the study.

Chapter 4 is data analysis, interpretation and discussion of the study findings.

Chapter 5 provides summary of the research findings, conclusions and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a brief review of literature regarding diarrhoea. It reviews literature on the global burden of diarrhoea (regional, national and local) among children less than five years old. Since the diarrhoeal phenomenon is a broader subject, specific literature is reviewed according to mothers' knowledge, attitudes and practices in terms of dehydration, as affecting their diarrhoeal under five-year old children.

2.2 International Literature on dehydration among children less than five years old

Worldwide, diarrhoea is the second most common cause of morbidity and mortality among infants under the age of five. This follows an acute respiratory infection, which is also a major cause of malnutrition. Khan, Danish, Ashfaq, Ahmad, Mohammed, Warsi and Khan (2016) attest to the fact that every year, around 10.8 million children in developing countries die before reaching the age of five. Diarrhoea has been identified as the chief cause of deaths among such children in South Asia. Globally, this is prevalent in most low income countries. In poor countries, diarrhoea ranks as the second major killer for under five-year old children. As indicated above, diarrhoea remains a leading cause of mortality and morbidity of children in Sub-Sahara Africa.

This is a region where geographic, economic, political, social, cultural and personal factors create continuous challenges to the prevention and control of diarrhoea. This epidemic deserves sustained research and attention as the international public health strives to confront newer issues in the context of infectious diseases and changing burdens of diseases associated with demographic transition. World Health Organisation (2015) estimates diarrhoea to have caused about 1.6 million deaths among children less than five years in developing countries. Despite the declining mortality rates in some of these countries, diarrhoea has continued to be of major concern.

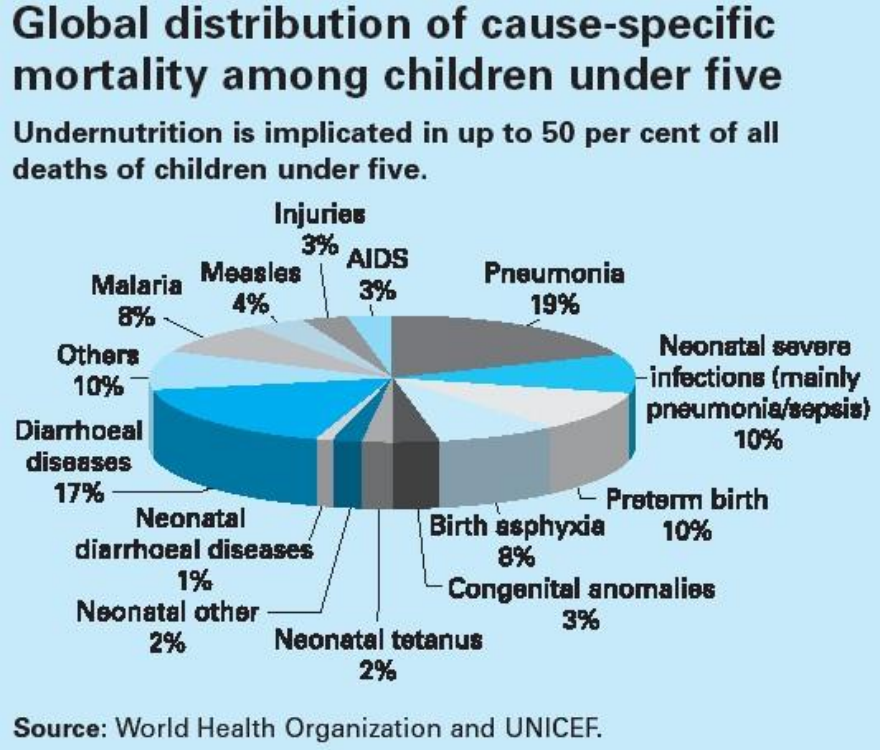


Figure 2.2.1 Global causes of (0-5 yrs) mortality rate

2.3 Dehydration among 0-5 years old children in Sub-Saharan Africa

According to Olakunle, Odili, Kamaldeen and Buhari (2015), diarrhoeal disease remains a leading cause of mortality and morbidity for children in Sub-Sahara Africa. They state that diarrhoeal disease alone is responsible for 27% of all infant morbidity and 24% of all infant mortality in Nigeria, and more than 1.5 million children under five continue to die each year as a result of acute diarrhoea. In Ghana, diarrhoea has been identified as the second most common health problem treated in outpatient clinics. According to the WHO (2013), there are more than 700 million episodes of diarrhoea annually among children who are less than five years old in developing countries. It is also reported that each under five year old child in Sub-Sahara Africa has five episodes of diarrhoea per year. An estimated 800,000 die each year from diarrhoea and dehydration. The majority of deaths are reported in rural African communities.

A study conducted in India revealed that on average, children below three years of age in developing countries experience about three episodes of diarrhoea each year (Chaundhary, 2014). Complications such as dehydration develop in children less than five years when signs and symptoms of diarrhoea are not detected early and promptly treated by parents (Hill, Kirkwood & Karen, 2011). Chaundhary (2014) reiterates that early detection, prompt and appropriate health care seeking could reduce childhood deaths by 20%.

Oral rehydration solution (ORS) is recommended for the treatment of diarrhoea at home. Hill *et al*. (2011) explain that success in reducing childhood mortality requires partnership between health workers and families. According to WHO (2013), the global burden of this disease indicates that diarrhoea will continue to be one of the major contributors to child deaths in 2020 unless significant efforts are made to control it.

As defined by Hoffman (2015), diarrhoea is a condition that involves frequent passing of loose or watery stools wherein some become acute. This means diarrhoea is not a long-term phenomenon, but a common cause of numerous deaths in developing nations, especially among young children and babies. It usually appears rapidly and may last from between five to ten days. People with diarrhoea often have fever stomach-aches since it may be caused by inflammatory bowels syndrome.

2.4 Dehydration among children less than five years in South Africa

Chola, Snyder, Merson, Wagstaff and Mkhasibe (2015) point out that the present health information available from Stats South Africa's household surveys indicates that diarrhoea is one of the leading causes of morbidity and mortality among children who are less than five years old in the country. The true burden of childhood diarrhoea, however, is not accurately known. Official data from Statistics South Africa estimate that diarrhoea accounts for approximately 20% of under-five deaths (SA STAT, 2015). The 2010 General Household Survey (GHS), (a nationally representative inquiry into the livelihoods of South Africans), showed that there were over 60,000 cases of childhood diarrhoea per month and approximately 9,000 child diarrhoeal deaths in the same year.

In South Africa, for example, it is believed that diarrhoea is closely linked to people's social and economic status. In light of this, the phenomenon has the most adverse effects in the country's impoverished communities. That is, children living in poverty are approximately ten times more likely to die from diarrhoea than their more privileged counterparts. Poor nutritional status, poor environmental conditions and conditions such as HIV/AIDS make children more susceptible to severe diarrhoea and dehydration (Lanata, Fischer-Walker, Olascoaga, Torres, Aryee & Black, 2013). Furthermore, disparities in access to water and sanitation services and poor provision of essential interventions have exacerbated the high prevalence of diarrhea in this country.

Lanata *et al*. (2013) explain that efforts were made in South Africa in 2009 to deal decisively with the diarrheal pandemic, hence the country becoming the only one in Sub-Sahara Africa to include the rotavirus vaccine in routine child immunizations. The vaccine, which has been

shown to be effective in preventing severe rotavirus diarrhoea, has seen moderate coverage throughout the country. However, rural coverage remains low for many of the other recommended interventions such as soap-hand washing and ORS. Although these health promotion interventions are affordable, there are significant challenges to their adoption. Such challenges include knowledge, attitude and practices and diarrhoea management by mothers whose children suffer from diarrheal infection (Mumtaz, Mohammed, Shah & Khalique, 2014).

2.5. Mothers' Knowledge regarding the causes of dehydration in their management of diarrhoea

Mumtaz *et al*. (2014) allude to the fact that diarrhoea is not a lethal phenomenon if properly and timeously attended to. The problem lies with mothers' improper knowledge and their misdirected approach towards its management. This leads to a high degree of mismanagement which results in severe dehydration. Several studies have been done in different areas of the world about mothers' knowledge on how to properly deal with diarrhoeal infections, use of ORS, and the impact of mothers' knowledge of the management of dehydration. In all this, very few studies have been done in rural hospitals such as those in Thulamela B Municipality.

A study by Ghasemi, Talebian, Alavi and Mousavi (2013) in Kashan, Iran, revealed that mothers studied in the research had inadequate knowledge about causes, diagnosis and treatment of dehydration in the management of diarrhoea. Shah, Amad, Khalique, Afzal, Ansari and Khan (2012) stated that early recognition and management of danger signs are key strategies in treating diarrhoeal diseases at home. The WHO recommends use of the oral rehydration solution (ORS) and zinc supplementation in the management of diarrhoea in children under the age of five years. WHO (2013) pointed out that the oral rehydration solution is a life-saving treatment safe for people to use in their homes. Oral rehydration, however, is yet to achieve its full potential in preventing diarrhoea deaths due to many factors such as poor social and economic status, lack of knowledge among caregivers and failure to provide therapy when needed. Further, diarrhoea treatment practices are not evidence based, as shown by the widespread prescription of unnecessary drugs.

Ghasemi, Talebian, Alavi and Mousavi (2013) note that research on diarrhoea in Nigeria reveals that most mothers have a poor understanding of what causes dehydration among diarrhoea affected children, and only 9.9% use ORS in their treatment of diarrhoea. Studies further show that there is poor management of diarrhoea by mothers in particular areas. Similar studies also show that mothers usually delay seeking medical advice about diarrhoea

related infections until it is too late, whereby their children are already dehydrated and have lost a considerable amount of weight.

WHO recommend that mothers and caregivers should be in a position to identify signs of dehydration such as excessive thirst, sunken eyes, excess urine output, excessive drowsiness, poor skin turgor, restlessness and absence of tears (Ghasemi *et al*., 2013). Literature reveals paucity of information on KAP by pharmacists on diarrhoea management. Studies reveal that the way forward with ORT is to inform and support people so that they put available knowledge into practice since successful management of diarrhoea potentially lies with an informed individual rather than health services.

Operario, Bristorl, Listatta, Nydam and Houpt (2015), in a study done in rural clinics, discovered that about half of their respondents knew about ORT. Of the few who could properly prepare the SSS, only a significant percentage actually administered it to their children at the outset of diarrhoea. In another study, it was found out that although the majority of the respondents were aware of SSS, most of them erroneously believed that it cured diarrhoea. Only a small percentage of the respondents could demonstrate the correct ORT recipe (Onwukwe, Van Deventer & Omole, 2016).

In another study done in Africa, it was reported that the majority of mothers claim to have heard of SSS (257 out of 300) while a small proportion said they have never heard of it (Diallo, Cong, Henderson & McGrath, 2017). A study done in Burundi concluded that the greater ORT awareness, the greater its use. Contrarily, a Nigerian study concluded otherwise because despite the high knowledge and acceptance of ORT among respondents, the actual practice was not satisfactory (Onwukwe *et al*., 2016). The Burundi study maintains what is already known on this subject while the Nigerian one opens up new issues on this phenomenon.

2.6. Mothers' attitudes towards the use of SSS in managing dehydration and diarrhoea

The level of knowledge the caregiver has is directly proportional to the type of attitude she/he adopts. Tobin, Isah and Asogun (2014) claim that in some developing countries, knowledge and use of oral rehydration therapy to successfully manage diarrhea in under-five age-range may be declining. This is irrespective of the fact that the majority of mothers reportedly access health education on oral rehydration therapy. Studies about attitudes of mothers towards SSS reveal that many of the caregivers' children do not like the taste of the ORT because this is not traditionally palatable. The WHO advises that alternative home rehydration fluids should be used in situations where a child refuses ORT because of its taste (Hassan, 2015).

This WHO advice has important implications for successful management of the ORT programme. That is, strategies need to be put in place to deal with the situation, thus helping change mothers' and caregivers' attitudes towards ORT. Additionally, inappropriate feeding practices, irrational use of antibiotics, anti-diarrhoeal preparations and other forms of drugs, including herbal remedies during diarrhoeal episodes, may worsen diarrhoeal morbidity and mortality (Tobin *et al*., 2014). To motivate for use of SSS and change of attitude towards it, ingredients should be added in small amounts to improve the taste of the rehydration solution. Some of the ingredients that may be added are, *inter alia*, fresh lemon, fruit juice, mashed banana and tea. Sillah, Ho and Chao (2013) discovered that caregivers' attitudes towards ORT were generally unsatisfactory.

2.7 Practices of mothers in managing diarrhoea

In South Africa, the introduction of ORT (a simple home-made salt and sugar solution which has the potential of saving lives of millions of children with diarrhoea) was seen as a landmark scientific breakthrough, but with potent challenges. These challenges stem from the fact that most of the morbidity and mortalities (due to diarrhoea) are more prevalent in resource poor, socially and economically backward, educationally disadvantaged and underprivileged South African communities (Mengistie, Berhane & Worku, 2013). This is further compounded by the fact that a home-made regimen, Salt Sugar Solution (SSS) is now introduced to communities that are already used to modern medicine.

Several studies have been done in South Africa, Africa and beyond, especially on determinants of ORT usage. In all these studies, the efficacy and effectiveness of ORT against diarrhoea mortality at home, the community and health facility levels remain unquestionable. In most cases, over 90% of potential diarrhoea deaths were prevented by the use of ORT. In a particular ORT study done in Soweto, Wagstaff and Mkhasibe (2012) reported that infant morbidity and mortality related to diarrhoea were reduced markedly due to the use of homemade ORT. Rahman, Shankar, Sinrh and Triphathi (2014), in their study done in Bangladesh, established that there was a major reduction in diarrhoea-related fatality rates after the introduction of village based pre-packed ORT (Mengistie et al., 2013).

However, for the simple reason that most inhabitants of rural areas in developing countries have poor access to health services that include pre-packed ORT, use of simple rehydration solutions such as the SSS was advocated for by Ellerbrock in his study titled, 'Oral rehydration therapy in rural Bangladesh with home ingredients (Karambu, Matiru, Kiptoo & Oundo, 2013).

Mukiira and Ibisomi (2013) observe that in Nairobi, mothers waited for days while using homemade remedies such as SSS until the situation became worse, after which their first line of service was a chemist or a drug store. Mothers were found to wait until the child's health deteriorated, and only then would they take the child to a health facility (African Population and Health Research Centre, 2002). Mukiira and Ibisomi (2013) show that mothers and care-givers may not provide ORS to children suffering from diarrhoea. They note that one possible explanation for the low use of ORS could be care-givers' misconception of ORS or SSS and lack of information on ORS or SSS in the management of diarrhoea. Mukiira and Ibisomi (2013) assert that it is possible that women are aware of ORS but do not know how to prepare the SSS or do not have access to those packs being distributed by healthcare facilities (as they do not visit such facilities).

Berisha, Hoxha-Gashi, Gashi and Ramadani (2009) reflect that many parents continue to restrict their children's diet when they have diarrhoea (rotavirus or the stomach flu). This means that no milk or any other favourite foods are given during diarrhoeal episodes. However, experts believe that children should be given their regular diet when they have diarrhoea. Most children should continue to eat a normal diet, including formula or milk, when they have mild diarrhoea (Practices Parameter, 1996). The Centre for Disease Control and Prevention recommends that children receiving semi-solid or solid foods should continue to receive their usual diet during episodes of diarrhoea (CDC, 2003).

Yoghurt, with active culture containing acidophilus, may also be helpful to a child with diarrhoea. Starting a BRAT diet (Bananas, Rice, Applesauce and Toast) is popular among parents when their children have diarrhoea, and this is usually not necessary (CBC, 2003). Tobin, Paul-West and Isah's (2013) study indicate that knowledge of proper use and the advantage of ORS show significant gaps that have implications on the uptake and proper practices of diarrhoea management at home.

Furthermore, child feeding and drug use practices during diarrhoea also show lapses that could impact negatively on the health of diarrhoea infected children (Tobin, *et al*., 2013). Shah, Ahmad, Khalique, Afzal, Ansari and Khan (2012) state that in accordance with the integrity management of neonatal and childhood illness guidelines, children with some or no dehydration should be managed at home for diarrhoea. It is important to assess their awareness regarding home-based management of diarrhoea at frequent intervals to provide feedback for the on-going programmes (Shan, Amad, Khalique, Afzal, Ansari & Khan, 2012). The majority of mothers could prepare ORT in the demonstration room provided for the above

study, yet at the end of this practical exercise, only half of them were able to prepare a correct rehydration solution. For the entire study sample, it was amazingly discovered that only a few mothers were actually conversant with the ORT administration.

Masiha, Khalid, Malik and Shah (2015) acknowledged that the administration of correctly prepared ORT is central to effective and successful management of diarrhoea. It is particularly important to use the correct rehydration solution to prevent complications arising from the use of hyper-aosmolar or hypo-osmolar rehydration solution, which could cause either hypernatremia or hypernatremia. According to the current recommendations by the South African Department of Health on the use of ORT in the treatment of diarrhoea, only cups are recommended for use as a method for administering ORT.

Bham, Shah and Saeed (2015) found that use of unsterilized and contaminated feeding bottles (especially with teat) to administer ORT is a dangerous practice that must be discouraged. The challenge for all health care professionals is to devise strategies to disseminate this message to caregivers' homes. Moreover, attention needs to be paid to the volume of rehydration solution given to children at the onset of diarrhoea. It is not uncommon to see caregivers administering grossly inadequate quantities of ORT. Breastfeeding provides important protection against infectious diarrhoea, particularly to up six month old children where breast milk is the feeding option. Furthermore, several studies have shown that within the first 6 months of life, non-breastfed infants were more likely to die from diarrhoea and its complications than breast-fed ones.

2.8 Conclusion

Drawing from the review of literature, diarrhoea still and will remain one of the major contributors to child deaths in years to come, unless significant efforts are made for its early detection, prompt home treatment and appropriate health-care seeking measures. The review reveals that knowledge of causes and management of diarrhoea among children below five years of age was adequate in certain regions, while inadequate in others. Incorrect perceptions of diarrhoeal manifestations were also identified as causes of massive death amongst infants in Sub-Sahara Africa.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presented the overall research methodology for this study, which includes amongst other things, the research design, study setting, population, sampling and sampling procedure, instrument utilised for collecting data, validity, reliability, pilot study, data collection and analysis thereof, as well as ethical considerations and dissemination of study findings.

3.2 Research Methodology

De Vos, Strydom, Fouche, and Delport (2014) state that research methodology is the creation and development of techniques and strategies to collect data. This study was done quantitatively. This is because quantitative research methods involve the implementation of statistics to measure data. Statistics, according to De Vos *et al* (2014), are a very simple matter but a powerful tool in the hands of the researcher who is able to view their nature and interrelationships more understandably. Through statistics, therefore, the researcher was able to conceptualise what otherwise might be incomprehensible (McMillan, 2000). This was one of the advantages of quantitative methodology over other methodologies. Statistics gathered through questionnaires were translated into tabular format for easy interpretation.

3.3 Research Strategy

Research strategy and design is a plan and procedure for research that span decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2014). This study adopted a descriptive cross-sectional survey design. This enabled the study to describe the level of knowledge, attitudes and mothers' practices regarding causes of dehydration when managing childhood diarrhoea in Thulamela B Municipality. The integral qualities of quantitative-cross sectional are expectations that a researcher sets aside her experiences, perceptions and biases to ensure objectivity in the conduct of the study and the conclusions drawn.

3.4 The study setting

This study was conducted in Thulamela B Municipality Clinics, Vhembe District. Vhembe District lies in the Northern part of Limpopo Province. It is situated near the Kruger National Park. To the South East, there is Mopani District and to the South West, Capricorn District; to the North East, there is the Botswana border and, to its northern side, the Zimbabwe border.

This district covers about 18,569 square kilometres and has an estimated population of 1.3 million people. The district is largely rural and households are mostly headed by females (Limpopo Vhembe District Profile, 2016). Africans are the majority (98.2%); Coloureds, 0.1%, Asians, 0.4% and Whites, 1.1%. Languages spoken in the district are Venda (67.2%), Tsonga (24.8%), Northern Sotho (1.6%), Afrikaans (1.3%) and others (5.1%) (Limpopo Vhembe District Profile, 2016).

Thulamela B Municipality is one of the sub-municipalities in Vhembe District with 3 local areas, namely, William Eddie (with 8 clinics, 1 mobile clinic and 1 health-care centre), Sibasa (8 clinics, 1 mobile clinic and 1 health-care centre-Thohoyandou Health Centre) and Shayandima (9 clinics and 1 mobile clinic). In total, there are 30 primary health care facilities in Thulamela B Municipality. The majority of Thulamela B residents use pit toilets. Worse, there is chronic shortage of water, even in urban areas such as Sibasa. Most families are female headed and, and most these people are illiterate (Limpopo Vhembe District profile, 2016).

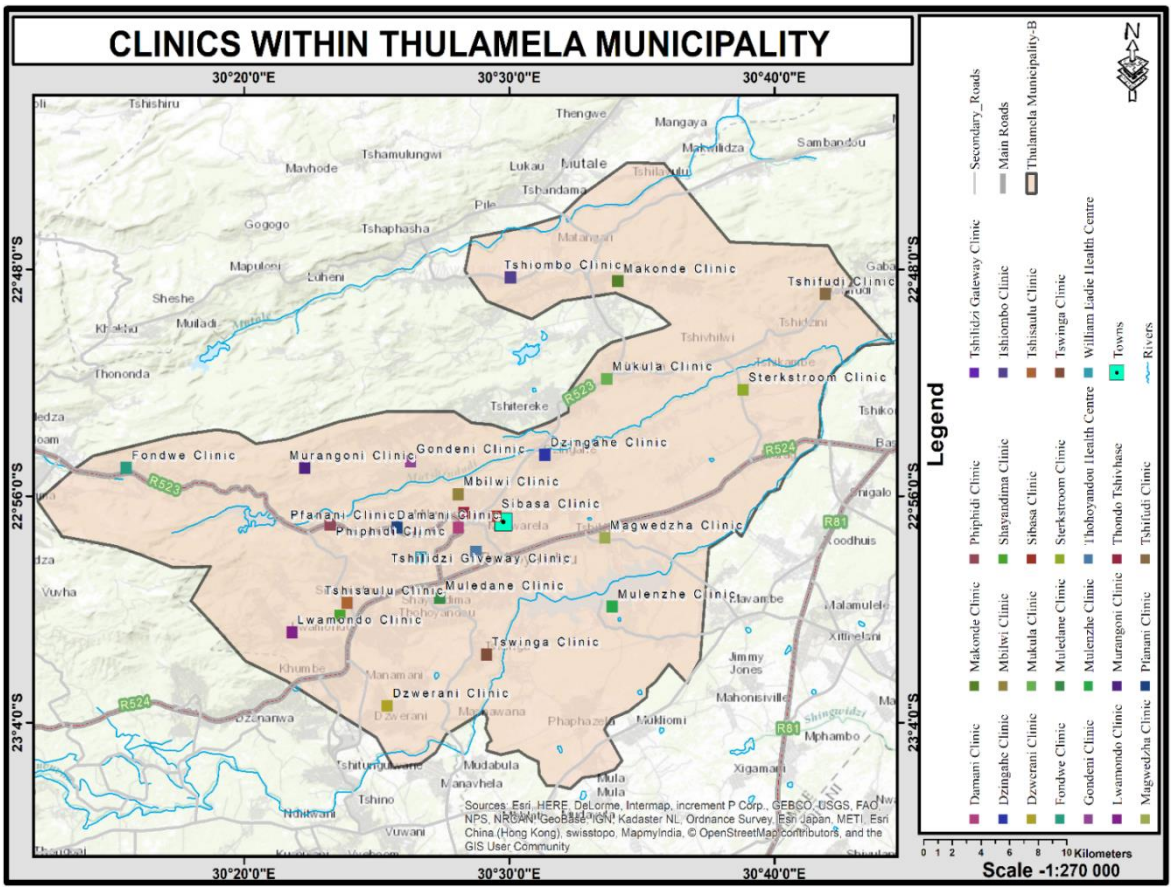


Figure 3.4.1 Map showing clinics found in Thulamela B

3.5 Population of the Study

Brink, van der Walt and van Rensburg (2012) explain population as the entire group of persons or objects of interest to the researcher, and those people met the criteria that the researcher is interested in studying. This study's target population were mothers of 0-5 years old children who brought children for consultation at PHC facilities. The chosen population of the study were all mothers with children under the age of five who brought their children for consultation at any of the thirty primary health-care facilities (clinics) in Thulamela B Municipality. The reason for including all mothers who were consulting with 0-5 year old children was that in terms of knowledge and attitudes, the study did not exclusively require a person to expereince development of diarrhea. Therefore, all mothers were included in the study. Furthermore, as indicated in the background, diarrhea is common to any child between 0-5 years, thus all mothers/caregiver were incuded as respondents. A sample of those mothers were selected as discussed underneath.

3.6 Procedures for sampling

A sample comprises elements of the population considered for actual inclusion in the study. Samples were drawn because researchers want to understand the population from which these are drawn and to explain facets of the population (Robinson, 2014:14). This sampling procedures were followed based on economic terms and time. The study sample were characterised by mothers of under five year old children, who brought their children for consultation at clinics in Thulamela B Municipality.

Given that there were many clinics in Thulamela B Municipality, the purposive sampling procedure was used. Purposive sampling, "also known as judgmental, is a type of non-probability sampling technique. Non-probability sampling focuses on sampling techniques where units to be investigated are based on the researcher's judgement. Shayandima and Sibasa Clinics and Thohoyandou Health Centre were purposively selected because of the high numbers of consultations (2015/16) by mothers whose children were less than five years old. Therefore, the researcher assumed that there might be a possibility of receiving a high number of respondents in that regard.

The convenience sampling procedure was used to conveniently select mothers in each of the selected clinics in Thulamela B Municipality that participated in the study. This sampling type from the non-probability sampling method relies on data collected from population members who are conveniently available to participate in the study (Barratt & Lenton, 2015). In other words, this sampling procedure involves getting respondents wherever one can find them and wherever is convenient. The table below shows the number of visits from the 2nd quarter of

2015 to the first quarter of 2016 by mothers whose children were less than five years old. This table helped the study to conveniently select clinics to carry out the study. Once sampling was done and a suitable sample obtained, data collection resumed, as shown in the following section.

Table 3.6.1: Population frame of PHC visits by mothers of children under the age of five, from 2015-2016

Clinic	Apr 2105	May 2015	Jun 2015	Jul 2015	Aug 2015	Sept 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Grant total
Shayandima	1 617	876	842	987	748	801	809	804	805	667	902	1 124	10 982
Sibasa	1319	1 691	1 111	725	823	1 263	1 412	717	1408	1002	1074	1658	14203
Thohoyandou H\C	1532	1554	1687	1488	1612	1566	1538	1524	1403	1316	1671	1991	18 882
													44 067

3.7 Sample Size

Leedy and Ormond (2012) state that there is no fixed number or percentage of subjects that determines the size of an adequate sample. Studies have indicated that the bigger the sample, the more the significance of the results. The study used the following Slovin's formula to determine its sample size.

n = sample size of the adjusted population.

N= population size

e = accepted level of error set at 0.05.

$$n = \frac{N}{1 + N \times e^2}$$

$$n = \frac{44\,067}{1 + (44\,067 \times (0.05)^2}$$

= 44 067/ (1+ 110.1675)

44 067/111.1675

= 396.40= n=396

Table 3.7.1: Sampling frame of mothers whose children are below five years of age

Name of the clinic	Number of mothers	Number of respondents	Percentage sample %
Shayandima	10 982	98	25%
Sibasa	14 203	128	32%
T/ndou H/C	18 882	172	43%
Total	44 067	398	100%

With reference to the above, proportional sampling of mothers was calculated by dividing the number of mothers per selected clinic by the total number of mothers in Thulamela then multiplying by the sample size, for example, 10 982/44067x396=98/25%.

3.8 Data Collection tool

In this study, the investigator invented a structured and close-ended questionnaire with four sections administered to the population sample. These sections are: Section (A) sought personal information of the respondent; Section (B) probed the knowledge of mothers on the topic under study, Section (C) dealt with mothers' attitudes and Section (D) focused on practices regarding the management of dehydration and diarrhoeal diseases among children less than five years old. Section D was done in a Likert format (strongly agree, agree, disagree, strongly disagree and undecided).

The whole instrument was produced using the KAP model guidelines. Mothers' practices were measured through respondents' percentage in response to the question. The instrument was developed and used after a thorough review of pre-existing instruments, which were used to identify knowledge, attitudes and practices of people towards medical intervention of any sort. The questionnaire was developed in English and translated to Tshivenda, as the majority of Thulamela B residents are Venda speakers.

3.9 Data collection Processes

The data collection process is an important aspect of research. As such, inaccurate data collection leads to invalid results. In quantitative approach, there are several methods of data collection which include clinical trial, observation, interviews and surveys. Self-administered, a paper, pencil and closed-ended questionnaire were distributed to respondents who were mothers of under-five year old children during their PHC visits. The researcher arrived at a clinic in the morning. Each visit was scheduled beforehand, wherein the ethical clearance letter and that for permission to conduct the study in that clinic were submitted to clinic management in time.

In order to ensure that the questionnaires were fully completed, respondents were requested to either complete the questionnaire before they receive their PHC service or after. The researcher introduced herself to prospective respondents, where she explained the purpose of the study. Consent forms were issued to each prospective participant for their comfort. The researcher allowed prospective respondents to ask questions where they need clarity. The process continued in all sampled clinics until the required number of respondents were obtained.

3.10 Validity and Reliability of the data collection tool

This section provided a discussion on the validity and reliability of the data collection tool. Validity and reliability pertaining to the instrument used in collecting data remain critical components in enhancing findings of the study. This section presents the two aspects in full.

3.10.1 Validity

Validity is the point to which a particular tool or instrument is able to measure that which it is expected to measure (Robinson, 2014). To ensure content validity of the instrument, a draft questionnaire was submitted to the supervisor for expert scrutiny regarding the relevance and readability of each item and to ensure that it was in line with the KAP model. The literature review assisted in the use of correct information in modifying the questionnaire to address the study's aim and objectives. This was done to avoid mismatch between what the study sought to achieve and how that is supposed to be conducted. The data collection instrument was pre-tested to ensure that ambiguities are eliminated in such a way that respondents are able to comprehend the statements well. Respondents were given time to go through the questionnaire, and the researcher cleared any misunderstandings where questions arose.

310.2 Reliability

Reliability is the extent of consistency in relation to the results from the study (Burns & Grove, 2013). This was done through the use of pre-testing and re-testing of the data collection instrument by requesting neutral respondents with the same characteristics to complete it (questionnaire) on two different occasions. Ten percent (10%), which is equivalent to 37 of the sampled mothers from Sterkstroom Clinic, were requested to complete the questionnaire for pre-testing purposes.

The reliability of the instrument was assessed by checking the similarity of responses from 37 mothers who availed themselves for the second time. Cronbach alpha, which measures the degree of internal consistency ($0 \leq \alpha \leq 1.0$) of the instrument, was used to ascertain reliability of the instrument. Thereafter, data were collected using this instrument. Further reliability was ensured through revising and adding items in questionnaire, thus widening the scope the study. It is worth noting that all the mothers who completed the pre-testing question were excluded when the final questionnaire was completed.

3.11 Data analysis

Collected data were coded and captured on excel and later analysed using the Statistical Package for Social Sciences (SPSS) version 24.0. Descriptive statistical analysis was used to summarise data while frequency tables and charts were used to present results of the study. The responses on the knowledge section were computed into percentages and frequencies, attitudes were rated in a Likert scale, and factor analysis was conducted using principal component analysis (PCA).

3.12 Ethical Consideration

The research ethics involve protecting the rights of respondents and institutions in which the research is done, at the same time maintaining scientific integrity (Burns & Grove, 2005). The proposal was presented to the University Higher Degrees Committee (UHDC) at the University of Venda for recommendation and approval. Thereafter, it was registered with the university's Research Directorate and Innovation Office, where it also underwent scrutiny by the University's Research Ethics Committee. The ethical clearance was presented to the Department of Health, Limpopo, Thulamela Municipality Offices and selected clinics for permission to access prospective respondents.

3.12.1 Informed consent

Respondents were duly briefed about the study's aim and objectives and were requested to complete and sign the consent form before completing questionnaires. The researcher ensured that all the essential information such as the purpose of the study and its significance, as well as voluntary participation, were in the consent form to enable the respondents to make informed decisions before signing it. Respondents were informed of their rights to refuse to participate in this research if they so wished.

3.12.2 Confidentiality and Anonymity

The respondents were told that the information collected for this study would be kept confidential, as completed questionnaires were kept under lock and key and information provided were not made available or divulged to any other person. The researcher ensured that respondents remained anonymous; their names or any other identification were not recorded anywhere or made public.

3.13. Dissemination of the Study

The findings of this study will be kept in the library of the University of Venda and a few papers or journal articles will be published in available peer-reviewed and accredited national and international journals. There will be presentations made to various stakeholders, locally and elsewhere e around the world.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4. Data Analysis and Interpretation

4.1 Demographic characteristics of respondents

Table 4.1.1 below presents the demographic characteristics of respondents.

		Frequency	Percent
Gender	Female	394	99.0
	Male	4	1.0
Age	15-25	124	31.2
	26-35	190	47.7
	36-45	67	16.8
	46 & Above	17	4.3
Highest qualification	No formal education	5	1.3
	Primary level	17	4.3
	Secondary level	17	4.3
	Passed grade 12	127	31.9
	Tertiary level	232	58.2
Home Language	English	10	2.4
	Venda	367	92.2
	Tsonga	15	3.8
	Sotho	6	1.6
Marital Status	Single	203	51.0
	Married	181	45.4

	Divorced/Separated	9	2.3
	Widow	5	1.3
Occupation	Employed	81	20.6
	Unemployed	289	72.4
	Self-employed	26	6.5
	Pensioner	2	0.5
Relationship to child (the consulting)	Grandmother	29	7.3
	Mother	342	85.9
	Aunt	8	2.0
	Other	19	4.8

4.1.1 Gender and Age of respondents

Table 1 shows that the biggest percentage of respondents were females, who made up ninety-nine percent (99%) compared to only one percent (1%) of male respondents. These results would indicate that those who are knowledgeable about dehydration among children under five were mostly female. Regarding age, respondents whose ages were between twenty-six (26) and thirty-five (35) were in the majority (48%), while those between the ages of fifteen (15) and twenty-five (25) represented thirty-one percent (31%). Respondents between thirty-six and forty-five made up seventeen percent (17%) of the participants, while the remaining four percent (4%) were forty-six and above. Looking at the age range of those who completed the questionnaire, the majority of respondents (48%) were aged 26-35, and those between the ages 15-25 (31%) were mostly those at childbearing and rearing age. These would certainly be people constantly experiencing dehydration among children under five.

4.1.2 Home language and highest qualification

The majority of respondents (92%) were Venda speakers, while Tsonga speakers made up four percent (4%), followed by Sotho and English speakers with two percent (2%), respectively. This due to the delimitation of the study or the fact that the study covered only mothers who were residing in the Vhembe District. Moreover, the majority of these respondents had tertiary level qualification, as shown by fifty-nine (59%) percent while those who have passed grade 12 were thirty-two percent (32%). Respondents with only primary and

secondary level qualifications were four percent (4%), respectively, followed by one percent (1%) of those with no formal qualification.

4.1.3 Marital status, occupation and relationship to the child

The majority of respondents (51%) were single, while those who were married made up forty-five percent (45%). Only two percent (2%) were divorced or separated while one percent (1%) were widows. Furthermore, the majority (72%) were unemployed compared to only twenty percent (21%) who were employed. The remaining seven percent (6, 5%) were self-employed while pensioners made up only half a percent (0,5%). With regard to respondents' relationship with children, eighty-six percent (86%) were mothers to children and seven percent (7%) were grandmothers. Only two percent (2%) of respondents were aunts, while respondents who represented others made up five percent (5%).

4.2 Nutritional status of children that were brought to the clinic for consultation

Table 4.2.1 Nutritional status of children brought to the clinic for consultation is provided below.

		Frequency	Percent
Nutrition Status (Child's RTH Card)	Well Nourished	359	90.2
	Malnourished	39	9.8

The results in Table 4.2.1 show that ninety percent (90%) of children brought to the clinic were well nourished and very healthy, while ten percent (10%) were malnourished and not healthy.

4.3 Knowledge of mothers regarding management of diarrhoea symptoms

Table 4.3.1 presents results in relation to knowledge of mothers on the management of diarrhoea.

Has this Child suffered from diarrhoea in the past 2 weeks (Past 14 days)?	No	107	26.9
	Yes	**291**	**73.1**
Do you know diarrhoea?	**No**	**205**	**51.5**
	Yes	193	48.5

Have you heard of ORT/SSS?	**No**	**206**	**51.8**
	Yes	192	48.2
Do you know what ORT/SSS is used for?	No	120	30.2
	Yes	**278**	**69.8**
Have you ever used ORT/SSS before and stopped?	No	325	81.7
	Yes	73	18.3
Did your child had nausea and vomiting during diarrhoea	**No**	**278**	**69.8**
	Yes	120	30.2
Did your child had fever during diarrhoea	No	33	8.3
	Yes	**365**	**91.7**
Did your child had abdominal Pains	No	105	26.4
	Yes	293	73.6
Did your child had cramps	No	67	16.8
	Yes	331	83.2
Did your child had three or more unformed stools within a day	No	122	30.7
	Yes	276	69.3
Did your child had Blood in stool	No	23	5.8
	Yes	375	94.2
Did your child had Other signs that are not listed here	No	299	75.1
	Yes	99	24.9

Table 4.3.1 shows that the majority, seventy-three percent (73%) of children had suffered from diarrhoea in the past 2 weeks (past 14 days). These results indicate that the majority of respondents had done something in relation to managing diarrhoea. The interesting part of results in Table 3 is that the majority (52%) do not know diarrhoea compared to forty-eight percent (48%) who know about the disease. This results indicate that some of respondents,

due to lack of knowledge about diarrhoea, may not know how to manage diarrhoea or may not take such an ailment seriously, which might put the lives of the children in danger.

Moreover, fifty-two percent (52%) of the respondents have never heard about ORT/SSS compared to forty-eight percent (48%), who indicated that they have heard about it. Additionally, seventy percent (70%) of these respondents indicated that they knew what ORT/SSS is used for. This is in comparison to thirty percent (30%) of those who indicated that they do not know what ORT/SSS is used for.

Furthermore, the majority of respondents, when asked if they had used ORT/SSS before and stopped symptoms such as vomiting, fever, abdominal pains, cramps, nausea, three or more unformed stools within a day, blood in stool, or any other of symptoms.

Seventy percent (70%) indicated that they had never used ORT/SSS before to stop vomiting in children, compared to only thirty percent (30%) who indicated that they had used it.

On fever (92%), abdominal pains (74%), cramps (83%), blood in the stool (94%) and three or more unformed stools within a day (69%), respondents indicated that they had used ORT/SSS to stop such ailments or symptoms related to diarrhoea.

With regard to nausea and any other symptoms, the majority (75%) of respondents indicated that they had never used ORT/SSS before to stop vomiting in the children.

4.4 Knowledge regarding Causes of diarrhoea

The results, in relation to respondents' knowledge of causes of diarrhoea, are presented in the Table 4.4.1 below.

		Frequency	Percent
Worm infection	No	148	37.2
	Yes	250	62.8
Germ infection	No	371	93.2
	Yes	27	6.8
Indigestible foods	No	94	23.6
	Yes	304	76.4
Teething	No	147	36.9

	Yes	251	63.1
Poor hygiene practices	No	98	24.6
	Yes	300	75.4
Do you think diarrhoea is dangerous to your child's health?	No	18	4.5
	Yes	380	95.5

On respondents' knowledge in relation to causes of diarrhoea, the majority of respondents, indicated that worm infection (62%), indigestible foods (76%), teething (63%) and poor hygiene (75%) cause diarrhoea amongst children. Respondents, as shown by ninety-three percent (93%), do not think that germ infection does cause diarrhoea. Responding to the question on whether they think diarrhoea is dangerous to their children's health, the majority of respondents (96%) indicated that indeed, it is dangerous to their children's health. These results indicate that respondents are aware of causes as well as dangers that could be posed by diarrhoea on the lives of their children.

4.5 Knowledge regarding prevention of diarrhoea and attitudes of mothers regarding source of information.

Table 4.5.1 below shows where did mothers got information on the prevention of diarrhoea and their attitudes regarding source of information

		Frequency	Percent
Prevention of diarrhoea	**No**	**40**	**10.1**
	Yes	358	89.9
Attitude of mothers regarding sources of information			
Television	No	233	58.5
	Yes	165	41.5
Radio	No	56	14.1
	Yes	342	85.9
Newspaper	No	24	6.0
	Yes	374	94.0
Clinic	No	49	12.3
	Yes	349	87.7
Village Health Worker	No	369	74.4
	Yes	29	25.6
School	No	20	5.0
	Yes	378	95.0
Reading	No	262	65.8
	Yes	136	34.2
Clinic staff	No	44	11.0
	Yes	354	89.0
Other sources	No	48	12.1
	Yes	350	87.9

The majority of respondents (90%) in Table 4.5.1 indicated that they have knowledge regarding prevention of diarrhoea compared to ten percent (10%) who said they did not know. In relation to attitude of mothers on the source of information pertaining to diarrhoea, only fourteen percent (14%) of respondents indicated that their main sources of information is not radio while the majority indicated that indeed they use radio (86%); newspapers (94%); clinic (88%); school (95%); clinic staff (89%) and other sources (88%). Though forty-two percent (42%) of respondents indicated that their source of information in relation to diarrhoea is television, fifty-eight (58%) denied that. Furthermore, the majority of respondents (74%), compared to only (26%), indicated that village health workers are not their source of information, regarding diarrhoea. The majority of respondents also indicated that their source of diarrhoea is not reading, as shown by sixty-six percent (66%) who said 'No', compared to only thirty-four percent (34%) of those who said Yes.

4.6 Practices of mothers regarding feeding and hygiene aspects

Table 4.6.1 below showing feeding and hygiene practices

		Frequency	Percent
Does your child feed on his/her own?	No	52	13.1
	Yes	346	86.9
Do you wash your child's hands before she/he eats?	No	77	19.3
	Yes	321	80.7
Do you wash your hands before feeding your child?	Never	14	3.5
	Usually	384	96.5
Do you often warm cooked foods before you feed your child?	Always	11	2.8
	No	387	97.2
Do you buy foods from street vendors for your child?	Yes	121	30.4
	No	277	69.6

- The results in Table 4.6.1 show that when respondents were asked whether their children feed on their own, the majority (87%) indicated that they do, while only thirteen percent (13%) said 'No'. The majority of respondents (81%) also indicated that their children do wash their hands before they eat, whereas (19%) do not. Furthermore, the majority of respondents (96%) indicated that they usually wash their hands before they feed their children, but (4%) do not wash their hands. Some do not often warm cooked

foods before they feed their children (97%) but only (3%) do. Although thirty percent (30%) of respondents indicated that they do buy foods from street vendors for their children, the majority fifty-six percent (56%) indicated that they do not.

4.7 Attitude of mothers regarding source of water to use at home

Table 4.7.1 below shows attitudes of mothers regarding source of water to use at home

		Frequency	Percent
River	No	379	95.2
	Yes	19	4.8
Tap	No	17	4.3
	Yes	381	95.7
Stream water	No	387	97.2
	Yes	11	2.8
Rain water	No	382	96.0
	Yes	16	4.0
Borehole	No	381	95.7
	Yes	17	4.3
Dam	No	385	96.7
	Yes	13	3.3
Other sources	No	12	3.0
	Yes	386	97.0

The results in Table 4.7.1 show that the majority of respondents do not use water from the river (95%); stream water (97%); rain water (96%); borehole (95%); dam (97%) as well as other sources (97%), as sources of water. The results show that the majority of respondents (96%) use tap water for home usage.

The responses in Table 7 would suggest or indicate that respondents are susceptible to unclean water that might, in the end, expose them to diarrhoea, that could pose danger to their children.

4.8 Practices of mothers regarding types of drinking water used at home

Table 4.8.1 shows practices of mothers regarding types of drinking water to use at home

Practices of mothers regarding types of drinking water used at home		Frequency	Percent
Filtered water for drinking	No	383	96.2
	Yes	15	3.8
Untreated water for drinking	No	393	98.7
	Yes	5	1.3
Boiled water for drinking	No	348	87.4
	Yes	50	12.6
Other types of water for drinking	No	78	19.6
	Yes	320	80.4

With regard to practices of mothers in relation to types of drinking water used at home, the majority of respondents indicated that they do not use filtered water (96%) and boiled water (87%). Respondents, however, indicated that they do not use untreated water for drinking (99%), but any other type of water is used for drinking (80%).

4.9. Discussion of the findings

The findings in this study reveal that respondents who participated in the study are at a childbearing and rearing age and are mothers to children. As shown in Table 1, the majority of respondents were Venda speakers and Tsonga speakers who reside in the rural areas of the Vhembe District municipality. The findings also reveal that the majority of them had tertiary level qualification while very few had primary or no formal qualification. Moreover, the majority of respondents were single or married, while very few of them were divorced and widowed.

It is worth noting that the majority of the respondents were unemployed, while very few of them were self-employed and pensioners. This might imply that the majority are able to look after their children and are hands-on in relation to their children's health and welfare. Mutalik and Raje (2016) maintain that a mother is the primary caretaker of the family and is mostly responsible for teaching young children issues in relation to health and hygiene practices. Getachew, Guadu, Tadie, Gizaw, Gebrehiwot, Cherkos, Menberu and Gebrecherkos' (2018) study found that incidences of diarrhoea were statistically associated with, amongst other

things, educational status of mothers or guardians and breast feeding. This argument is sustained by Desta et al. (2017) who also found that the level of knowledge was significantly associated with educational status, occupational status and source of information about diarrhoea. Mosweu's (2018) study found that the attitude towards management of diarrhoea was poor. Mutalik and Raje (2016) argue that if the mother of the child is illiterate or not educated, she might not be able to provide or even teach her children proper hygienic practices. This, according to Mutalik and Raje (2016), would certainly lead to persistent infection and diseases on such children. In Workie et al.'s (2018) study, findings revealed that the attitude and practice of mothers were limited on the prevention and home-based management of under-five's diarrheal diseases.

4.9.1 Nutritional status of children who were brought to the clinic for consultation

As shown in Table 2, which was about nutritional status of children brought to the clinic for consultation, the majority of children (90%) were well nourished and very healthy, while ten percent (10%) were malnourished and not healthy.

4.9.2 Knowledge of mothers regarding management, causes and knowledge regarding prevention of diarrhoea

Drawing from the overall results, the majority of respondents have had children who suffered from diarrhoea in the past 2 weeks (past 14 days) prior to data collection and were knowledgeable about the disease, while very few did not know about it. The few who are not knowledgeable may not know how to manage diarrhoea or may not take such an ailment seriously, which might put the lives of the children in danger, especially looking at those respondents who indicated that they have never heard about ORT/SSS.

The findings might be worrying, given the conclusions in Agbolade, Dipeolu and Ajuwon's (2015) survey, which found that even though the use of oral rehydration therapy is a recognised and effective intervention strategy to prevent dehydration among children during episodes of diarrhoea, many women did not use ORT during episodes of diarrhoea among their children. Agbolade et al. (2015) identified misconceptions of causes of diarrhoea as a real threat to the application of preventative measure to curb the scourge of the ailment. A study by Rao et al. (2015) in urban slums of Bengaluru found that awareness in relation to diarrhoea and its prevention, as well as ORT, were lacking among mothers in urban slums.

Furthermore, findings also show that they know some of the cause of diarrhoea such as worm infection, indigestible foods, teething and poor hygiene. Apart from that, findings show that respondents do not think that germ infection causes diarrhoea; however, they are aware that diarrhoea is dangerous to their children's health. The findings support the argument of Rao et al. (2015) who indicated that diarrheal diseases remain fatal and are the second most leading cause of death, next to pneumonia among under-fives globally, contributing to one-fifth of child deaths.

Moreover, diarrhoea is one of the leading causes of death in children in sub-Saharan countries where socio-economic, behavioural and environmental factors play significant roles in causation and distribution of the disease (Zedie & Kassa, 2018). It is killing more children than AIDS, malaria and measles combined (Rao et al. 2015). It is important to note that the findings in the study by Mekonnen, Mengistie, Sahilu, Mulat and Kloos (2018) show that a number of caregivers had inadequate knowledge, while some had unfavourable attitudes on diarrhoea occurring in under-fives. This inadequacy in knowledge about diarrheal diseases can be very challenging to caregivers who should be providing proper care to children.

The findings further show that the main sources of information regarding diarrhoea were radio, newspaper, clinic, school, clinic staff and many other available sources not necessarily mentioned. Very interesting is the fact that reading is not one of the main sources of information regarding diarrhoea. This would indicate that respondents are not interested to read the pamphlets they may be given or provided with at a clinic. In Merali et al.'s (2018) study, wealthier, older and more educated respondents were found to have better prevention scores.

Mosweu (2018)'s study found that practices of caregivers on case management of diarrhoea were very poor and that only twenty-eight percent (28%) of caregivers had good practice on diarrhoea management.

Moreover, Mosweu (2018) found that inadequate KAP was significantly associated with gender and level of education. Mutalik and Raje (2016) argue that the health and knowledge of the child's mother as the main key care giver in most circumstance, plays an important role in determining the health of the child. Mutalik and Raje (2016) maintain that the health and the vitality of the child reflects in many ways, the knowledge, attitude and the health practices of those who are taking care of the child, especially the mothers.

A study by Agegnehu, Zeleke, Goshu, Ortibo and Adinew (2019) found that diarrhoea prevention practice among under-five children caregivers was low. Agegnehu et al. (2019) also found that prevention practice was significantly associated with caregivers' awareness

on frequency of diarrhoea in a day, occupation and family size in a house. In their study, Merali, Morgan and Boonshuyar (2018) found that even though the vast number of caregivers was very knowledgeable about diarrhoea, they were found wanting, as their scores were poor with regard to preventative behaviour for diarrhoea.

Workie, Sharifabdilahi and Addis' (2018) study found that more than half of mothers (54.9%) had a negative attitude towards home-based management and prevention of diarrhoea among under-five children. Apart from that, mothers who made up fifty-eight percent (58%), had poor practices towards home-based management and prevention of diarrhoea among under-five children (Workie et al., 2018). In a study by Anim-Larbi (2017), it was found that mothers who thought that their children could die from diarrhoea were found to demonstrate better management practices compared to those who perceived diarrhoea as merely severe.

4.9.3 Practices of mothers regarding feeding and hygiene aspects as well as their attitude regarding the source of water and type of drinking water used at home

The findings of the study show that respondents indicated that their children feed on their own and their children do wash their hands before they eat while at the same time, they, as caregivers, usually wash their hands before they feed their children. Desta, Assimamaw and Ashenafi's (2017) study revealed that the level of practice was low, and there was a slightly higher level of knowledge among caregivers in relation to home management of diarrhoea. The level of practice was found to be significantly associated with the source of information about diarrhoea, age and educational status. A study by winter, Dzombo and Barchi (2019) found that though the majority of women were able to correctly identify key times to wash their hands, common causes of diarrhoea and strategies to prevent diarrhoea, but still engaged in behaviour associated with poor individual and/or public health.

A study by Musonda, Siziya, Kwangu and Mulenga (2017: 228) revealed that poor hand washing practices among parents or caregivers was significantly associated with diarrhoea in under-fives at Arthur Davison Children's Hospital, Zambia. The same attitude was found in a study by Kioko and Obiri (2012) where respondents never washed their hands with soap to counter waterborne hazards and contamination.

Findings also indicate that respondents do not often warm cooked foods before feeding their children. It is important to note that water used at their homes are mainly from rivers, stream water, rain water, boreholes, dams as well as other unnamed sources. Beyene and Melku's (2018: 1) study found that clean latrines, water, home-based water treatment, number of rooms in the home, living with animals in the same house, type of food the child eats, hand

washing before food preparation had significant association with the occurrence of under-five's diarrhoea.

These findings show that mothers are capable of exposing their children to a variety of unclean water that might expose them to diarrhoea and could pose danger to their children. Furthermore, such water is never filtered or boiled before it is used. A study by Kioko and Obiri (2012) in Western Kenya showed that even though respondents were knowledgeable about ideal methods of water collection, treatment and storage, they were not practicing them appropriately. Furthermore, Kioko and Obiri (2012) found that respondents' attitudes was that they perceived their drinking water source as safe and did not see the need to treat it, even when they know that they had collected it from open sources like rivers.

Kioko and Obiri (2012) argue that the adopted practice of treatment for household water and safe storage have a potential to reduce disaster risk to health, while leading to improvement of livelihoods in various community. The quality of drinking water is dependent on the culture, knowledge and attitude of people in community (Kioko & Obiri, 2012). Rao, Jadhav, Ranganath and Dsouza (2015) note that diarrhoea, which is most prevalent in developing countries, is caused mainly by lack of safe drinking water, inadequate sanitation and poor hygiene. Winter et al (2019) highlight that any efforts or health targets to reduce prevalence of diarrheal diseases in informal settlements may not be met unless particular attention is paid to the needs of women living in these environments. A study by Baker, O'Reilly, Levine, Kotloff, Nataro and Ayers (2016) found that allotment of sanitation facilities with just one to two other households have the potential of increasing the risk of moderate-to-severe diarrhoea (MSD) in young children, compared to using a private facility.

In recommending measures that can be used to curb diarrhea on children under five, Workie et al. (2018) suggested that there be adequate provision of health education, as well as full dissemination of information and community conversation plans, which should be aimed at creating a positive attitude and practice towards better prevention and management of under-five's diarrheal diseases. Agbolade et al. (2015) strongly recommended provision of health promotion and education interventions to address challenges posed by diarrhea in various communities. Mekonnen et al. (2018) argue for the design and implementation of an inclusive health education intervention focusing on uneducated child caregivers as it has the potential to benefit in improve their knowledge and attitudes towards lessening acute childhood diarrhea in such communities. Mekonnen et al. (2018) further recommend health promotion programs, which should be focused on enhancing maternal knowledge and attitudes as they might have a protective effect on diarrhea and enhance how well it can be managed.

Kioko and Obiri (2012) recommend that the government embark on variety of training programs which should specifically focus on drinking water safety that advocate appropriate water use, hygiene and sanitation strategies. Zedie and Kassa (2018) reason that maternal education on hygiene practices should be provided to mothers who are self/privately employed. Maternal education should focus on household water treatment, safe disposal methods of child faeces, short distance to latrines and availing separate kitchens, as these are crucial in reducing under-five's diarrhoea in the community (Zedie & Kassa, 2018).

4.10 Conclusion

This chapter provides data analysis, interpretation and discussion related to the study that was conducted in Thulamela B clinics regarding factors contributing to the development of dehydration in children less than five years suffering from diarrheoa.

CHAPTER FIVE

Summary of research findings, conclusions and recommendations

5.1. Introduction and an overview of the study

This study was aimed at identifying factors that contribute to the development of dehydration amongst children who are less than five years old, who suffered from diarrhoea in Thulamela B Clinics. The following objectives underpinned the study:

- To assess the level of knowledge mothers had on causes of dehydration among children under five years suffering from diarrhoea.
- To determine the attitude of mothers towards use of SSS as a means of oral rehydration for children with diarrhoea.
- To assess mothers' practices on the prevention of development of dehydration among children under the age of five who have diarrhoea.

In essence, the overall study sought to identifying factors that contributed to the development of dehydration amongst children less than five years old, who suffer from diarrhoea in Thulamela B Clinics by raising the following key question:

The study answered the following main research question:

- What factors that contribute to the development of dehydration amongst children less than five years, who suffered from diarrhoea in Thulamela B Municipality?

As stated in Chapter One, in order to respond to the main research question, the study attempted to answer the following secondary questions:

- What do mothers of children under five years of age know about causes of dehydration amongst their children?
- How do mothers view the use of SSS as a means of oral rehydration for children with diarrhoea?
- How do mothers prevent dehydration among children who are less than five years old and suffering from diarrhoea?

In a nutshell, the study is as follows:

- Chapter 1 constitutes the background of the study and the research problem to identify factors that contribute to the development of dehydration amongst children less than five years old, who suffer from diarrhoea in Thulamela B Clinics.
- Chapter 2 presents the review of literature on factors that contribute to development of dehydration amongst children who are less than five years old, who suffer from diarrhoea in Thulamela B Clinics.

- Chapter 3 presents the research purpose and the research design, the study setting, population, sampling and the sampling technique, data collection tools, validity, reliability, pilot study, data collection and analysis and ethical consideration.
- Chapter 4 presents data analysis, interpretation and discussion of results in relation to the aforementioned research questions.
- Chapter 5 provides the summary of the findings, conclusions and recommendations. This chapter also discusses major findings regarding quantitative data collection, recommendations related to the study, recommendations for further study as well as concluding remarks.

5.2. Major findings of the study

The following overall findings may be conclusive for this study.

5.2.1 Biographic findings

Three hundred and eighty nine (398) respondents completed the questionnaires. As highlighted in Chapter four (4), the majority of respondents were Venda speakers and Tsonga speakers who reside in the rural areas of the Vhembe District municipality. Furthermore, biographical information reveals that the majority had tertiary level qualification. The sample was composed of both single, married, divorced and widowed. Most importantly, they were unemployed while very few of them were self-employed and pensioners.

5.2.2 The main findings on factors that contributed to the development of dehydration amongst children less than five years old, who suffered from diarrhoea in Thulamela B Clinics

The main findings of the study are as follows:

a. The level of knowledge mothers had regarding the causes of dehydration among children under five years suffering from diarrhoea

The findings in this study reveal that respondents were knowledgeable about the disease as they had children who had suffered from diarrhoea in the previous 2 weeks prior to data collection, while very few of respondents lacked knowledge. The findings also reveal that respondents are aware about some of the causes of diarrhoea, which include amongst others, worm infection, indigestible foods, teething, poor hygiene and how dangerous diarrhoea is to their children's health.

b. The attitude of mothers towards use of SSS as a means of oral rehydration for children with diarrhoea

The findings of the study reveal that respondents are aware that their children feed on their own and they also ensure that children wash their hands before they eat. At the same time, they, as caregivers, usually wash their hands before they feed their children. The attitudes of respondents exhibit positive practices that are critical in prevention of diarrhoea in children under five.

c. Mothers' practices on the prevention of development of dehydration among children under the age of five, with diarrhoea.

Regarding mothers' practices on the prevention of the development of dehydration among children under the age of five with diarrhoea, findings of the study revealed that the majority of respondents never used ORT/SSS before to stop diarrhoea. Furthermore, findings show that respondents' main sources of water used at their homes are rivers, streams, rain water, boreholes, dams as well as other unnamed sources. It is not clear if respondents boil this water before they use it.

5.3. Conclusion

The study concludes that even though respondents were knowledgeable about the disease, and is aware about some of its causes, their overall practices can expose their children to diarrheal diseases. This is so, as findings indicate that respondents do not often warm cooked food before feeding their children and rely heavily on water sources such as the river, streams, rain water, and many others, that can expose their children to diarrheal attacks .

5.4 Recommendations

Based on the main findings of the study, as shown above, the following recommendations are proposed:

5.4.1. Recommendations relating to the study

The study recommends that the Department of Health conduct awareness campaigns to teach mothers how to manage diarrhoea. Charts about managing diarrhoea should be provided to mothers in their Home Language. Mothers to children under the age of five should be encouraged to learn and seek more information with regard to managing diarrhoea from all corners of the society. Nurses at the PHCs should all be trained on the use of IMCI strategies so that they may communicate appropriate information and skills to mothers on identification of early signs of dehydration, its complications and appropriate diarrhoea management knowledge, practices and skills. The Department of Health must appoint IMCI coordinators in each local area so that they may supervise, do follow ups after IMCI trainings, do support visits on monthly basis and emphasize IMCI strategies to be implemented in all Primary Health Care facilities (PHC). The Health Ministry must ensure that ORS or SSS (drip water) sachets are not only available, but are also accessible or given to mothers with children under the age of five. Mothers should be taught proper hygiene and should ensure that water used in their households is treated before used. The government, through the Ministry of Health, should ensure that proper standards of sanitation in refuse and excreta disposal are provided and properly maintained to reduce the risk of diarrhoea transmission.

5.4.2. Recommendations for further study

More broad-based further studies are needed to aid the generalisation made earlier to authenticate findings of this research. Such studies may include topics such as those focusing on models for proper enlightening and training to all caregivers, male and female, on how to apply effective ways to prevent and control diarrheal diseases in children under five.

5.5. Concluding Remarks

As noted throughout the chapters, this study sought to identify factors that contribute to the development of dehydration amongst children less than five years old, who suffered from diarrhoea in Thulamela B Clinics. This study concludes that respondents were knowledgeable about the disease and are aware about some of the causes of diarrhoea. However, their practices, such as not warming cooked food before they feed their children and relying heavily water sources such as the river show disregard to preventative measures crucial in curbing diarrheal exposure to their children.

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Appendix A : Approval from the University ethics committee

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Ms A Ndou

Student No:
11554580

PROJECT TITLE: **Factors contributing to the development of diarrhoea-induced dehydration among children aged below five years in Vhembe District.**

PROJECT NO: **SHS/18/PH/11/3005**

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Prof RT Lebese	University of Venda	Supervisor
Dr TG Tshitangano	University of Venda	Co - Supervisor
Ms A Ndou	University of Venda	Investigator – Student

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: July 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
DIRECTOR
RESEARCH AND INNOVATION
2018 -08- 15
Private Bag X5050
Thohoyandou 0950

University of Venda
PRIVATE BAG X5050, THOHOYANDOU, 0950λ LIMPOPO PROVINCEλ SOUTH AFRICA
TELEPHONE (015) 962 8504/8313 **FAX** (015) 962 9060
"A quality driven financially sustainable, rural-based Comprehensive University"

Appendix B : Approval from the UHDC

UNIVERSITY OF VENDA

OFFICE OF THE DEPUTY VICE-CHANCELLOR: ACADEMIC

TO : MR/MS A. NDOU

SCHOOL OF HEALTH SCIENCES

FROM: PROF J.E. CRAFFORD

DEPUTY VICE-CHANCELLOR: ACADEMIC

DATE : 23 JANUARY 2018

DECISIONS TAKEN BY UHDC OF 23RD JANUARY 2018

Application for approval of Mini-dissertation proposal in Health Science: **A. Ndou (11455580)**

Topic: "Factors Contributing to the Development of Diarrhoea0nduced Dehydration among Children Aged below Five Years in Vhembe District."

Supervisor	UNIVEN	Prof. R. Lebese
Co-supervisor	UNIVEN	Dr. T.G Tshitangano

UHDC approved Mini-Master's proposal

Prof J.E. CRAFFORD
DEPUTY VICE-CHANCELLOR: ACADEMIC

Appendix C : Approval from the province

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Stander SS (015 293 6650) Ref: LP_2018 11_006

Ndou A
University of Venda

Greetings,

RE: Factors contributing to the development of diarrhea-induced dehydration among children aged below five years in Vhembe District

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.hst.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, or incur any cost on the Department.
   - 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

31/10/2018
Date

Private Bag X9302 Polokwane
Fidel Castro Ruz House, 18 College Street. Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.
Website: http/www.limpopo.gov.za

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Appendix D : Approval from the district

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OFHEALTH
VHEMBE DISTRICT

Ref: S5/6
Enq: Muvari MME
Date: 15 November 2018

Dear Sir/ Madam:

PERMISSION TO CONDUCT RESEARCH
NDOU AZWINNDINI

1. The above matter bears reference
2. Your letter received on the 15/11/2018 requesting for permission to conduct research in our facilities is hereby acknowledged
3. The District has no objection to your request.
4. Permission is therefore granted for the research to be conducted within Vhembe District.
5. You are requested to make a presentation of your findings after completion to the District.
6. You are however to make the necessary arrangements with the facilities concerned.
7. Wishing you success in your research in the Vhembe health facilities.

..... 15/11/2018
CHIEF DIRECTOR DATE

Private Bag X5009 THOHOYANDOU 0950
OLD parliamentary Building Tel (015) 962 1000 (Health) (015) 962 4958 (Social Dev) Fax (015) 962 2274/4623
Old Parliamentary Building Tel: (015) 962 1848, (015) 962 1852, (015) 962 1754, (015) 962 1001/2/3/4/5/6 Fax (015) 962 2373, (015) 962 227

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Appendix E : Certificate of editing from the editor

23 Elfin Glen Road, Nahoon Valley Heights, East London, 5200

Professional EDITORS Group

To whom it may concern:

This certifies that the document whose title appears below has been edited for proper English language, grammar, punctuation, spelling and overall style by Rose Masha, a member of the Professional Editors' Group whose qualifications are listed in the footer of this certificate.

Title:

Factors contributing to the development of dehydration among under five children with diarrhoea in Thulamela B Clinics, Vhembe District

Author:

Azwinndini Ndou

Date Edited:

24 January 2020

Signed

Dr. Rose Masha

Appendix F : Questionnaires

Section A: Personal information

1. Respondent's Gender

Female	
Male	

2. Age Range

15-25	
26-35	
36-45	
46 and above	

3. Highest Qualification

No formal education	
Primary level	
Secondary level	
Passed grade 12	
Tertiary level	

4. Home Language

English	
Tshivenda	
Tsonga	
Sotho	

5. Marital Status

Single	
Married	
Divorced	

Widow	

6. Respondent's occupation

Employed	
Unemployed	
Self Employed	
Pensioner	

7. **Relationship to child (the consulting)**

Grandmother	
Mother	
Aunt	
Other	

8. Nutrition status (child's RTHCard)

Malnourished	
Well nourished	
Undecided	

9. Is the child breastfeeding or stopped after 2 years?

Yes	
No	
Undecided	

10. Has this child suffered from diarrhea in the past 2 weeks (past 14 days)?

Yes	
No	
Undecided	

SECTION B: KNOWLEDGE OF DIARRHOEA

11. Do you know diarrhoea?

Yes	
No	
Undecided	

12. Have you ever heard of ORT/SSS?

Yes	
No	
Undecided	

13. Do you know what ORT/SSS is used for?

Yes	
No	
Undecided	

14. Have you ever used ORT/SSS before and stopped?

Yes	
No	
Undecided	

15. What are the main signs/symptoms of diarrhoea?

Vomiting	
Fever	
Abdominal Pains	
Cramps	
Nausea	
Three or more unformed stools within a day	
Blood in stool	
Other	

16. What do you think causes diarrhea in young children?

Worm infection	
Germ infection	
Indigestible foods	
Teething	
Poor hygiene practices	
Other	

17. Do you think diarrhoea is dangerous to your child's health?

Yes	
No	
Undecided	

18. Do you know how to prevent diarrhoea?

Yes	
No	
Undecided	

19. How did you know about diarrhoea, its signs, how it spreads and its prevention?

Television	
Radio	
Newspaper	
Clinic	
Village Health Worker	
School	
Reading	
Clinic staff	
Other	

SECTION C: HYGIENE PRACTICES AND OTHER DOMESTIC BEHAVIOUR

Does your child feed on his/her own?

Yes	
No	
Undecided	

Do you wash your child's hands before she/he eats?

Yes	
No	
Undecided	

Do you wash your hands before feeding your child?

Never	
Sometimes	
Usually	

Do you often warm cooked foods before you feed your child?

Yes	
No	
Undecided	

Do you buy food from street vendors for your child?

Yes	
No	
Undecided	

Where do you get drinking water from?

River	
Tap	
Stream water	
Rain water	
Borehole	
Dam	
Other	

What type of water does your family use for drinking?

Filtered	
Untreated	
Boiled	
Other	

SECTION D: KNOWLEDGE REGARDING THE DEVELOPMENT OF DEHYDRATION AMONGST CHILDREN LESS THAN FIVE YEARS WHO SUFFER FROM DIARRHOEA IN THULAMELA B CLINICS

Please complete all questions. Mark with an 'x' Mark from Strongly Agree to Strongly Disagree

	5-Strongly agree	**4**-Agree	**3**-Disagree	**2**-Strongly disagree	1.Dont know
Diarrhoea is regarded as a major determinant of childhood morbidity.					
Diarrhoea is acquired via contaminated water and foods. As such, water-related factors are very important determinants of diarrhoea out-breaks.					
Diarrhoea is one of the leading causes of death amongst children under the age of five in the world.					
Children under three years experience, on average, three episodes of diarrhoea every year.					
Factors that contribute to persistent diarrhoea in children younger than 5 years include poor nutrition.					
Dehydration develops in children younger than five years when signs and symptoms of diarrhoea are not detected early and promptly treated by parents.					
The most dangerous complication is dehydration that occurs when there is excessive loss of fluids and minerals (electrolytes) from the body.					
Dehydration is particularly dangerous to infants and young children due to rapid body water turnover.					
Oral rehydration solution (ORS) is recommended for the treatment of diarrhoea at home.					
Diarrhoea is a condition that involves frequent passing of loose or watery stools.					

The high mortality rate among infants throughout the world means that four children die every minute as a result of diarrhoea.					
HIV infected children are more likely to be malnourished.					
Diarrhoeal diseases have been shown to be the leading cause of morbidity and mortality amongst HIV-infected children.					
The high rate of diarrhoea has been observed among boys than girls.					
Sanitation plays a key role in reducing diarrhoea morbidity.					
Preventative interventions for diarrhoeal diseases and their complications include improvement of water quality.					
Children are more likely to die due to poor access to oral rehydration therapy.					
Does your child receive rotavirus vaccine at 6 and 14 weeks?					

Thank you for your participation

Appendix G : Consent form

1. Purpose and explanation of the assessment

The purpose of the study is to investigate factors contributing to the development of dehydration amongst children under the age of five with diarrhoea in Thulamela B Clinics. A self-administered questionnaire written either in English or Tshivenda will be provided to respondents. The questionnaire comprises four sections: personal information, knowledge of diarrhoea, hygiene practices and other domestic behaviours as well as factors contributing to the development of dehydration amongst under five year old children with diarrhoea.

2. Benefits to be expected

The results obtained in the study will help mothers of children under the age of five to know what they are expected to do if their children contract diarrhoea to prevent dehydration.

3. Inquiries

Any questions about procedures that will be used during this research process or about its results are welcome. If anyone has any issue of concern, please raise that issue so that we clarify it.

4. Ethical considerations

The information obtained during data collection will be treated confidentially.
I.....on this day .....of.....2018, hereby consent
to being interviewed on the topic: **Factors Contributing to the Development of Diarrhoea induced Dehydration among Children Aged below Five Years in Vhembe District**

1. The use of data derived from these interviews by the interviewer in a research report will be treated confidential

I also understand that:

1. I am free to end or to recall my consent to participate in this research at any time.

2. Information given up to this point of participation could, however, still be used by the researcher.
3. Anonymity is granted by the researcher and data will, under no circumstances, be reported in a manner that will reveal my identity.
4. I may refrain from answering questions should I see an invasion of my privacy.
5. I will be given an original copy of the agreement.

Interviewee	Date	Interviewer	Date
.....	…….	.....	……..