CAREGIVER'S KNOWLEDGE ON FACTORS CONTRIBUTING DIARHOEA DISEASES AMONG CHILDREN UNDER FIVE YEARS AT SELECTED CLINICS IN THE VHEMBE DISTRICT, LIMPOPO PROVINCE

By

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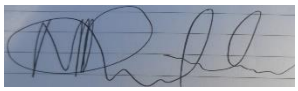
DECLARATION

I **Mulibana Lushaka** declare that the dissertation on ***Caregiver's knowledge on factors contributing to diarrhoeal diseases among children under five years at selected Clinics, in the Vhembe district, Limpopo province*** submitted by me, has not been submitted previously for a degree at this or any other university, that it is my own work in design and that all reference material contained therein has been duly acknowledged.



18/02/2022

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Signature **Date**

DEDICATION

I dedicate this dissertation to the following:

- God almighty, for making this all possible
- My late father, Reckson Mphalaleni, sister, Tshimangadzo, and uncle Thanyani who did not live long to witness my success and achievements
- My wife and my siblings, who supported me throughout the study

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ABSTRACT

Background: Diarrheal disease is still the leading cause of mortality and morbidity among children under 5 years. WHO estimates that globally 525,000 children under five years die due to diarrheal diseases every year with 1.7 billion cases of diarrheal disease**.**

Purpose: The purpose of this study was to determine the caregiver knowledge on factors that contributing to diarrhoeal disease among children under 5 years at a selected public clinic, in the Vhembe district of Limpopo Province.

Study setting: The study was conducted at a selected public clinic in the Vhembe district. The Vhembe District is located in the northern part of Limpopo Province, South Africa – boarded by Capricorn District in the South-West and Mopani in the East Vhembe. The district is comprised of four (4) sub-districts namely Collins Chabane, Makhado, Musina, and Thulamela

Methodology: A quantitative approach using cross-sectional descriptive survey design was conducted among 185 caregivers to be conveniently selected from five clinic in Thulamela B sub district. A convenience sampling method was used to sample 185 respondents and purposive sampling was used to sample five health care facilities. A self-administered closed –ended questionnaire was used to collect data in this study and validity of the instrument was ensured and the development of instrument was guided by a wide range of literature and inputs of experts. The instrument was test-retested for reliability and Validity was ensured through face and content validity. Data was collected through self-administered questionnaires and was analysed using Statistical Package for Social Sciences (SPSS) version: 26.0 Descriptive statistics was used to analyse, and association was tested through cross tabulation chi-square and results was presented in the forms of tables and pie charts. Ethical measures were considered throughout the study.

Results: The study found that dirty water, poor hygiene, mix feeding (exclusive breast feeding and formula milk feeding) were the most contributory factors to diarrhoea in children under five years of age.

Recommendations: The recommendation were done based on the study results.

Conclusion: This study concluded that health education for mothers, in particular, should be used to improve knowledge and behaviour for managing diarrhoea at home in children under the age of five.

Keywords: caregiver, diarrhoeal diseases, knowledge

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LIST OF ABBREVIATIONS AND ACRONYMS

EBF	Exclusive Breastfeeding
FFDCA	Federal food, drug, and cosmetic act
IIED	International Institute for Environment& Development
MDGs	Millennium Development Goals
ORS	Oral rehydration solution
SPSS	Statistical Package for Social Sciences
SSS	Sugar salt solution
UNICEF	United Nation Children's Fund
WHO	World Health organisation

CHAPTER 1
INTRODUCTION AND BACKGROUND

1.1 Introduction

Childhood diarrhoea is one of the leading causes of death in children under 5 years and is a major threat to child health (Kotlo, et al., 2017). Diarrhoea is defined as the passing of three or more loose or watery stools per 24 hours or an increase in stool frequency or liquidity considered abnormal by the mother (Alebel, et al., 2018).

According to the WHO (2018) diarrhoeal diseases were also confirmed to be a leading cause of child mortality and morbidity in the world and mostly from contaminated food and water sources. Globally 780 million caregivers or individuals lack access to improved drinking water and 2.5 billion lack improved sanitation. Diarrhoea due to infection is widespread throughout developing countries. In developing countries children under three years of age experience an average of three episodes of diarrhoea every year. Each episode deprives the child of the nutrition necessary for growth. As a result diarrhoea is a major cause of malnutrition and malnourished children are more likely to fall ill from diarrhoea.

A study conducted in Cambodia by Wells (2018) found that type of food eaten by the mother and child was also reported as a believed cause of diarrhoea. In Hyderabad, India, respondents noted that hot food, which was classified as wheat, eggs, meat, and green mangos, contributed to diarrhoeal disease (Naseem & Swetha, 2016). Most African countries also experienced a very disturbing problem when it comes to diarrhoea in children under 5 years especially when the caregivers don't have relevant knowledge about contributory factors to diarrhoea.

1.2 Background

Diarrhoeal disease is still the leading cause of mortality and morbidity among children under 5 years. "WHO estimates that globally 525,000 children under five years die due to diarrhoeal diseases each year with 1.7 billion cases of diarrhoeal disease" (WHO, 2018). "In 2016, more than 5.6 million children under five years of age died worldwide of which 8.4% were assigned to diarrhoea" (WHO, 2019). Nevertheless, the mortality rate of children under five years old was still high (i.e. 32 deaths per 1000 live births in 2018), which was around five times higher than that in developed countries such as the United States of America (i.e. 6 deaths per 1000 live births in 2018) (Feng, et al., 2019).

A study conducted in Nepal, Asia, by Li, et al. (2020) found that boys had a higher risk of having diarrhoea than girls. Similar results were seen in studies done in Brazil and Sudan by Saeed and Sandstrom (2015) revealed that diarrhoea risk was found first to be increasing and then decreased with age. Children in 12-24 months old had the highest risk and was due to the combined effect of active immunity, children's activities, and behaviors in different ages. In autumn and winter, there was a lower risk of diarrhoea compared to spring and summer, which has been associated with dry weather in these two seasons and bacterial pathogens which is usually peak during hotter and rainy times.

According to a study conducted in Ethiopia, by Hailemichael, et al. (2017) diarrhoea was the result associated with a lack of formal maternal education, poor water supply, and lack of handwashing facilities. On the other hand Fazly, et al. (2016) in their study done in Malaysia, highlighted that children whose caregivers or mothers have primary educational levels are more likely to suffer from diarrhoea compared to those caregivers with tertiary education.

According to a study conducted in Botswana, by Mosweu (2018) caregivers do not know that children who are not immunized, are at risk of contracting diarrhoea as the rotavirus vaccine protects children against rotavirus infections which are the leading cause of diarrhoea in children under five years. A study done in Nigeria, by Omole, et al. (2019) revealed that teething was found to be the major contributory factor causing diarrhoea in children under five years. A study conducted in Semi Urban Community of Sokoto, Nigeria, by Raji, et al. (2017) found that children whose caregivers do not wash their hands before feeding are likely to suffer from diarrhoea disease due to lack of knowledge in hand washing.

Ogbeyi, et al. (2016) conducted a study in Nigeria on the assessment of caregiver's knowledge about diarrhoea. They found that most Nigerian caregivers were left behind when it comes to knowledge and factors that contributes to diarrhoea that makes the disease to continue to kill more children under five years. Moreover, Desta, et al. (2017) conducted a study about knowledge and practice associated with diarrhoea among caregivers of children under 5 years, and found that most caregivers do not have enough knowledge about factors that contribute to diarrhoea to children under 5 years. A study conducted in North West Ethiopia by Agegnehu, et. al. (2019) found that caregivers who wash their hands without using soap which results in ineffective removing of germs might result in diarrhoea transmission to children under five years. A study done in the Sebeta Town of Ethiopia, by Mohammed and Zungu (2016) found that children whose caregivers do not wash fruits, vegetable and not washing children's hands before they eat tend to suffer from diarrhoea.

Asfaha, et al. (2018) reveal that diarrhoea in children under five years was increased after they completed their first 6 months of exclusive breastfeeding and the risk was found to be highest from 12-23 months and this was because the children started to be fed solids foods and a variety of nutrients. According to a study conducted in Uganda by Omona, et al. (2020) children whose caregivers are older tend to have a low risk of contracting diarrhoea than those whose caregivers are younger, due to the low experience that may have in taking care of children. Bauleth, et al. (2020) conducted a study in Namibia and found that children who were living in an informal settlement with a wall built by asbestos and timber boards were likely to suffer more from diarrhoea than those who live in rural areas because of the inability to access toilets and safe water, and they highlighted that children who are not fully immunized according to expanded immunization program are susceptible to diarrhoea infections. Shine, et al. (2020) conducted a study in Debre Berhan town, Ethiopia which revealed that diarrhoea in children under five years can occur when the child starts crawling and the risk of ingestion of contaminated water and food are higher at this stage.

In South Africa, a few studies were conducted about diarrhoea in children under five years of age in (1994-2014) and lack of safe drinking water, poor sanitation and bad hygiene and malnutrition are all found to be factors contributing to the heavier burden of diarrhoea in children under five years (Awotiwon, et al., 2016). A study conducted by Ledwaba, et al. (2019) about children's toy contamination at the daycare centers and households, revealed that dirty water and food, unhygienic practices of caregivers, and poor domestic hygiene (e.g. open defecation) have been identified as the three main risks contributing factor to diarrhoea in children under five years.

Chukwu, et al. (2020) conducted a study in South Africa (North-west Province) and found that virus such as rotavirus and norovirus was found to be the leading cause of diarrhoea in children under five years. A study conducted in Durban, by Ramlal (2015) indicates that children who play in a dumping site where there is the disposal of plastic toilets, and rotten cats and dogs, are found to be potential for transmitting bacterial pathogens among children under five years particularly in an informal settlement where there is no recreational activities. A study done in Eastern Cape Province by Cenge (2015) showed that caregivers mentioned uncleaned water and not washing hands after defecation or toilet use as a contributory factor leading to diarrhoea in children under five years.

Limpopo province divides into three, urban, semi-urban and rural areas. In the rural areas, most of the caregivers are illiterate and still believe in traditional medication which was not proven and it makes things worse leading to persistent diarrhoea, kidney damage, and even

death (Phophi, 2019). A study done in rural Limpopo by Ikeda, et al. (2019) reveals that children under 5 years of age suffered more from diarrhoea during summer conditions than winter, since the area is very hot during summer.

Phophi (2019) conducted a study in the Vhembe District and found that caregivers mentioned food containing milk products and sugar as contributory factors causing diarrhoea in children under five years. Despite the above-mentioned studies, diarrhoea continues to be a challenging disease in under five in the deep rural villages of the Vhembe District, hence knowledge of caregivers to prevent or manage diarrhoea is important.

Hence, the caregiver's knowledge on the contributory factors was not assessed and explored in this area of Vhembe district. This was seen as a research gap since there is fewer study conducted focusing on caregiver's knowledge when it comes to diarrhoea. Most studies focused on the attitude, prevalence, home management of diarrhoea and leaves a gap in the knowledge of caregivers.

1.3 Problem statement

The researcher's works in a public clinic, where he has observed that caregivers continue to bring children under five years with diarrhoea. Each week the clinic sees about 12 children with diarrhoea and some are referred to hospital for further management of severe dehydration. This is happening despite the implementation of Integrated Management of Childhood Illnesses (IMCI) in clinics which include education of mothers on how to manage diarrhoea at home and what to do when the child's condition deteriorates at the household level. Diarrhoeal diseases continue to be a public health issue in developing countries and South Africa is no exception. The disease has many consequences which includes high morbidity and mortality especially among children under the age of five years. This condition may result to malnutrition as an outcome leading to children susceptible to various infections which may affect the child in delayed growth end up loss their lives.

According to the statistics of the Vhembe district, diarrhoea disease was seen to be a leading cause of deaths in children under 5 years thus **2015/2016, 2017/18 to 2019/20,** and continued to increase on daily basis. See the table 1.

Table 1. Annual trends of child death by priority conditions

NUMBER OF DEATH	2015/2016	2017/18	2019/20	Total
Diarrhoea death under 5 years	36	55	63	153
Pneumonia death under 5 years	35	43	50	129
Severe acute malnutrition death under 5 years	32	35	28	95

Adopted from: District Health Barometer 2015/2016, 2017/18 and 2019/2020

1.4 Rationale for the study

Fewer studies on diarrhoeal diseases were conducted in the Vhembe district. A study conducted by Phophi (2019) focused on the caregiver's practice of home management during diarrhoeal disease in children under five years in the Vhembe district. A study conducted by Ndou (2020) focused on factors contributing to the development of dehydration among children with diarrhoea in the Thulamela B Vhembe district. Their studies did not focus on caregiver's knowledge of factors contributing to diarrhoea among children under 5 years in the Vhembe district, so there is a need to conduct a study about the factors that contribute to diarrhoea of the targeted group indicated above. Lack of this knowledge might contribute to a great loss which may lead to increase morbidity and mortality.

Besides, the researcher has observed that many studies have been conducted in the urban area and there is a gap in rural areas where they don't have access to clean water although some villages receive water from municipality via truck once per two weeks, poor sanitation, low level of education and unable to get quality medication. There is a need to assess caregiver's knowledge on factors contributing to diarrhoea among children under 5 years within the Vhembe district since the statistic is rising. Therefore, the gap identified can be filled by this study.

1.5 Significance of the study

In this study, the community will be aware of or knowing the factors that contribute to diarrhoea in children under 5 years of age and its effects as well as the possible ways of avoiding those factors since results will also be presented in community radios. The caregivers would benefit from this study because there will be a reduced rate of children with diarrhoea and dehydration. The community at large will benefit from the study because they will be educated on how to manage diarrhoea, which will reduce the high diarrhoea outbreak in their children because they will know how to prevent and manage it. The department of health might also benefit because it might reduce the high rate of diarrhoea and death rate amongst the clinics and hospitals which will assist to reduce the government cost on the treatment of diarrhoea. The study might help in the development of policies and protocols on how to avoid and manage factors contributing to diarrhoeal diseases to save the costs for treatment. The results might help policymakers in the department to modify or update the guidelines such as Integrated Management of Childhood Illness, to improve the management of diarrhoea. Another research study might be done to enhance knowledge on factors contributing to diarrhoeal disease by caregivers. The researcher would like the next researcher to look at other aspects of diarrhoea

to go further and explore more about diarrhoea excluding under 5 years. Nursing education might benefit after the research results have been published about new knowledge that was not known. The study might add value to the body of knowledge.

1.6 Purpose of the study

The purpose of this study was to determine the caregiver's knowledge of factors that contribute to diarrhoeal diseases among children at selected clinics, in the Vhembe district of Limpopo Province.

1.7 Research objectives

Burns and Grove (2015) describe objectives as clear, concise, declarative statements expressed in the present tense and for clarity with only one or two variables.

The objectives of this study were to:

- Assess the level of knowledge among caregivers regarding factors contributing to diarrhoeal diseases among children under the age of five years,
- Describe the types of children's diet known by caregivers to prevent diarrhoeal diseases among children under the age of five years
- Explain the holistic management of diarrhoea among children under the age of five years in the Vhembe district of Limpopo province and
- Describe caregiver's knowledge of preventive measures to diarrhoea in children under the age of 5 years.

1.8 Definition of terms

Caregivers are paid or unpaid members of a person's social network who help them with activities of daily living and without formal training (Informal Caregiver Law definition, 2019). This study refers to mothers or anybody who takes care of children under 5 years of age.

Diarrhoea diseases are defined as the passing of three or more loose or liquid tools per day (World Health Organization, 2018).

In this research diarrhoea will be children from 0-5 years of age who are passing three or more loose stools per day.

Knowledge is a familiarity, awareness, or understanding of someone or something such as facts, skills, or objects (Stanford Encyclopaedia of Philosophy, 2020). In this study, knowledge is what caregivers know and understand regarding factors contributing to diarrhoea in children under five years.

1.9 summary

This chapter discuss about overview of the study include introduction and background about caregivers knowledge on factors that contribute to diarrhoea in children under five years. The study, presented the problem statement, purpose and significance of the study, the research question and the definitions of concepts. The next chapter 2 discusses the literature review conducted for the study about factors that contribute to diarrhoea in children under five years.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides a brief review of literature regarding diarrhoea. The purpose of a literature review is to familiarize the readers with all practical or theoretical issues related to the problem and it helps the researcher to lay out a foundation for the study. A literature review indicates what is known about an area of inquiry and suggests ways of conducting the study on the topic of interest (Polit & Beck 2015). Diarrhoea is defined as having three or more watery stools within 24 hours and is the second leading cause of 1.5 million deaths in the world among children younger than five years (Essomba, et al., 2015).

2.2 Prevalence and diagnosis of diarrhoeal disease in children

Factors related to the risk of diarrhoeal disease in children differs according to particular settings and populations (George, et al., 2014). On the other hand, Chola, et al. (2015) state that diarrhoeal disease is associated with socio-economic status. In South Africa, diarrhoeal disease is more common in children living in poverty, putting them at risk of dying ten times more than children living in home with no poverty (Chola, et al., 2015). Unger, et al. (2014) also associate diarrhoeal disease with poor countries, where infection is more associated with poor sanitation and hygiene, contaminated drinking water and low nutritional status and health.

2.3 Predisposing cause of diarrhoea among children under five years

Diarrhoea in children under five year is commonly a symptom of gastrointestinal infection and could be due to viral, bacterial or parasitic infection. Diarrhoea among children under five years could be spread from one person to the other through poor hygiene practice in preparation of food and poor personal hygiene after the use of toilet, drinking of contaminated food and water. Some children may have 3 – 4 episodes of diarrhoea per year depending on their nutritional status and level of immunity. Loss of fluid due to diarrhoea in children under five years is detrimental to the health of the child and contributes to loss of weight. Children who are not exclusively breast fed and are on weaning food are more vulnerable to diarrhoea and loss of weight with subsequent malnutrition. Effects of diarrhoea are therefore more adverse among children under five years who are malnourished and those living in low socio-economic conditions. Children under five years and living in low socio-economic conditions are five times more likely to die from complications of diarrhoea as compared to those in a privileged living conditions. Public health intervention which include vaccination against rotavirus, improved

food supplementation, improved water supply, sanitation are important in reducing morbidity and mortalities of children under five years associated with diarrhoeal diseases (Creek, 2014). The study found that knowledge and level of education did not translate into the ability of the caregivers to prepare and use ORS at home for a child with diarrhoea. Inability to prepare and use oral rehydration solution by caregivers was found to be a challenge among caregivers of children under five years. Health seeking behaviour is an important strategy to control and reduce morbidity and mortality of children associated with knowledge and management of diarrhoeal diseases among children under five years. The study in India by Shah, et al. (2012) found that caregivers were found to have little knowledge on feeding of children with a diarrhoeal episode.

2.4 Global burden due to diarrhoea among children younger than five years

Worldwide, diarrhoea is the second 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, et al. (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 of 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 of under five-year-old children in Sub-Sahara Africa. 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 years old child in sub-Saharan Africa has five episodes of diarrhoea per year.

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 deserve sustained research and attention as the international public health strives to confront newer issues in the context of infectious diseases and changing burden of diseases associated with demographic transition. The World Health Organization (2015) estimates diarrhoea to have caused about 1.6million 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 major concern.

2.5 Mother's knowledge regarding their management of diarrhoea

Mumtaz, et al. (2014) allude to the fact that diarrhoea is not lethal phenomenon if properly and timeously attended to. The problem lies with mother's improper knowledge and their misdirected approach towards its management. This leads to high degree of mismanagement which results in severe dehydration. Several studies have been done in different areas of the

world about mother's knowledge on how properly deal with diarrhoeal infections, use of ORS and impact of mother's knowledge of the management of dehydration. In all this very few studies have been done in rural hospitals such as those in Thulamela B municipal.

A study by Ghasemi, et al. (2013) in Kashan, Iran, reveals that mothers studied in the research had inadequate knowledge about causes, diagnosis and treatment of diarrhoeal dehydration in the management of diarrhoea. Shah, et al. (2012) state early recognition and management of danger signs are key strategies in treating diarrhoeal diseases at home. The WHO recommend the use of oral rehydration solution (ORS) and zinc supplement in the management of diarrhoea in children under the age of five years. Operario, et al. (2015) in a study done in rural clinics discovered that about half of their respondents knew about ORT, few who could properly prepare the SSS, only a significant percentage actual administered it to their children at the onset of diarrhoea.

2.6 Summary

This chapter dealt with literature review in details information about diarrhoeal disease or data that is already known from internationally, nationally and locally since diarrhoea still the second common cause of mortality and morbidity among children under five years. The next chapter 3 discusses the research methodology used for current study.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The first two chapters gave an overview of the foundation, as well as the literature review for the study. This chapter describes all the steps of the research methodology applied caregiver's knowledge on factors contributing to diarrhoeal disease among children under 5 years of age. The literature review helped the researcher to know the available research studies that were done. This assisted the researcher to identify the gap so that the current study covers what was not covered.

3.2 Study approach

In this study, a quantitative approach was used to determine caregiver's knowledge on factors contributing to diarrhoeal disease among children under 5 years of age. Quantitative research uses structure tools to generate numerical data and uses statistics to interpret, organize, and represent the collected data (Burns & Grove, 2015). In this study, the research approach was quantitative as the researcher use a structured questionnaire to collect data from respondents. This method allows the researcher to ask all the respondents the same questions with a predetermined response, which allows objective data to be collected throughout the study.

3.2 Study design

A study design is defined as a plan to which data assembled and its purpose is to provide the scheme for achieving the objectives of the study, either in the form of the research question, hypotheses, or study objectives (Maree, 2016). In this study, a cross-sectional descriptive survey design was used to determine caregiver's knowledge on factors contributing to diarrhoea disease among children under 5 years of age.

In a cross-sectional design, a large amount of data can be collected at a specific point in time which allows the results to be readily available. Non-experimental design was employed using descriptive design as the researcher is going to collect data and analyse it accurately on the caregiver's knowledge on factors contributing to diarrhoea disease among children under 5 years and the data was analysed quantitatively. A non-experimental design is chosen because was used simply to answer questions about the groups.

3.2.1 Descriptive research design

Burns and Grove (2017) define a descriptive design as a method to gain more information about variables within a field of study. The design was used to identify a phenomenon of

interest, identify variables within the phenomenon, and develop conceptual and operational definitions of variables in the study (Burns & Grove, 2017). In this study, the researcher described the caregiver's knowledge of factors contributing to diarrhoeal diseases among children under 5 years of age. Descriptive design was chosen as it involves the collection of quantitative information that can be tabulated in the form of graphs, charts, and numerical form.

3.3 Study setting

The study was conducted at a selected public clinic in the Vhembe district. Vhembe District is located in the northern part of Limpopo Province, South Africa – boarded by Capricorn District in the South-West and Mopani in the East Vhembe. The district is comprised of four (4) sub-districts namely Collins Chabane, Makhado, Musina, and Thulamela. It has 6 District Hospitals, 1 specialized, 1 regional hospital, 115 fixed PHC facilities, 8 community health centres, and 18 mobile clinics. The district hospitals provide a secondary level of care while specialized hospital provides mental health services and the regional hospital acts as a referral facility for the district hospitals fixed primary health care facilities, community health centres (CHCs) render comprehensive health care services whereas mobile clinics render primary health care in areas which are more than 5 km away from the clinic. The estimated population is around 468772. Vhembe district is characterised by semi-urban and rural area from the population 35% are said to be working formal employment compare to 65% which are self-employed as they are farmers who plough sweet potatoes, vegetables, and nuts, most of the people from this area have grade12, but few have tertiary education and they are culturally grounded as they still believe in old way of doing things using non-pharmacological drugs. This information substantiates the reason behind pursuing this study.

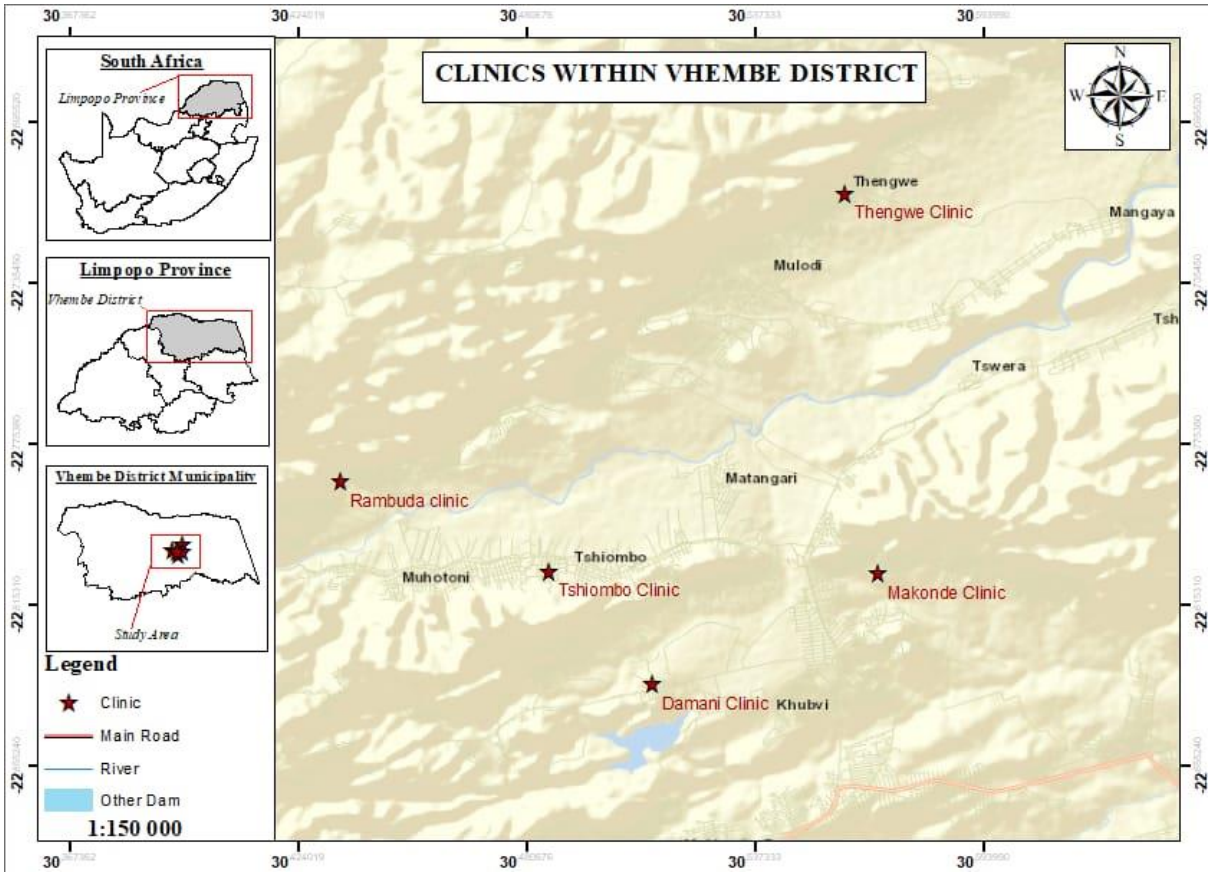


Figure 1: Map showing study area in Thulamela B.

3.4 Population

Burns and Grove (2017) define a population as the entire aggregate of cases that meet a designated set of criteria. In this study, the population was all caregivers having children under 5 years of age attending well-baby clinics in five selected public clinics.

3.5 Targeted population

Polit and Beck (2017) define the targeted population as the entire population in which a researcher is interested and to which he or she would like to generalize the study results. The population for this study was caregivers of children under five years of age who bring their children with diarrhoea at selected five public clinics".

3.6 Sampling method

According to Burns and Grove (2017) the sampling involves selecting a group of people, events, behaviour, or other elements with which to conduct a study. A sample is described as a subset of the population that represents the entire population to obtain information regarding the phenomenon (Burns & Grove, 2017). In this study sampling, was done in two phases, namely: sampling of the health care facility, and sampling of the respondents.

3.6.1 Sampling of the health care facility

This study employed purposive sampling, which is described as a method in which the researcher selects participants or institutions based on personal judgment about which ones will be most informative (Polit & Beck, 2017). The reason for choosing the specified clinics as summarised in Table 2 is that they have been identified as having a high rate of children under five that presented with diarrhoea.

3.6.2 Sampling of the respondents

The study used a convenience sampling method to select the caregivers as respondents. This method was chosen because it provides easy access to the respondents. The respondents were chosen from caregivers who are consulting at selected clinics when the researcher was present at the clinic for data collection. Table 2 gives details of the facilities and monthly stats from each sampling frame. This information was used to calculate the sample size using Slovin's formula as indicated in the following paragraph (LoBiondo-Wood & Haber, 2017).

Slovin's formula

Is used to calculate the sample size (n) given the population size (N) and a margin of error (e).

It's a random sampling technique formula to estimate sampling size

It is computed as n = N / (1+Ne2).

Whereas:

n = no. of samples

N = total population

e = error margin / margin of error

Table: 2 sampling frame from the study area

Name of Clinics	Number of caregivers	Number of Respondents	Percent
Tshiombo	75	75/280x165=44	26.7%
Makonde	56	56/280x165=33	20.8%
Damani	45	45/280x165=27	16.3%
Rambuda	60	60/280x165=35	21.2%
Thengwe	44	44/280x 165= 26	15.8%
Total	**280**	**165**	**100%**

Slovin's formula can be used to calculate the sample size.

The total number of caregivers visiting a study area is 280.

Sample size calculated using Slovin's formula below:

- n =sample size of the adjusted population
- N=population size
- e=accepted level of error set 0.05

- $n = \frac{N}{1+N(e)2}$
- $n = \frac{280}{1+280(0.05)2}$
- $n\frac{280}{1+0.7}$
- $n\frac{280}{1.7}$
- $n = 165$

To take care of attrition or non-response, 10 % was added to the sample size to make it 182. The total sample size was 182 caregivers who completed questionnaires.

3.6.3 Inclusion criteria

The research study included caregivers from age of 18 years and 35 who can read and write also taking care of children under 5 years of age and attending immunization or ill health at selected clinics and resided in any area under Vhembe district. The reason for inclusion and

exclusion criteria was to select only those who qualify to be part of the study and excluded those who do not meet the criteria.

3.7 Data Collection Instrument

The researcher used a self-administered questionnaire as an instrument for data collection in this study (see Appendix G). Relevant questions were designed after the literature review. The questionnaire was developed by the researcher guided by the objectives of the study. The questionnaire was submitted to the supervisors and the Statistician for review. The questionnaire was made up of close and open-ended questions. The questionnaire was written in English and for those who do not understand the question the researcher was present for any clarity. Those who do not understand English at all was excluded or not be part of the study. The questionnaire included instructions that the respondents need to follow when completing it. All covid-19 measures were adhered to throughout the data collection. The structured questionnaire comprised of five sections: Section A - demographic data, Section B - household. Section C - assessing caregiver's knowledge on factors contributing to diarrhoea among children under 5 years. Section D - questions related to feeding/diet. Section E -questions related to management.

3.8 Pre-test

The pre-test is about investigating the data collection instrument for the possible flaws before the actual data collection process (Brink, 2016). A pre-test was conducted to test the questionnaire for reliability and validity.

The rationale for pre-testing the research instrument is to:

- Determine the reliability and validity of the research instrument,
- Identify gross inadequacies before doing the full-scale study,
- Determine the feasibility of the sampling method,
- Detect unforeseen problems and flaws,
- Eliminate bias as far as possible, and
- Evaluate the questionnaire for clarity of questions, the effectiveness of the instruction completeness of the instruction, and completeness response set.

The researcher did the pre-test to ensure that the instrument is clear that everyone was understand. The questionnaire was given to the supervisor to go through it. Respondents for pre-testing were clinics under Shayandima's local area. The researcher selected two clinics with a total of 10 respondents, 5 caregivers from each clinic, which doesn't form part of the study but having the same characteristic. Pre-test helps the research her to identify mistakes

made in the instrument; whether respondents understand the language used and if there are some of the questions that respondents need clarity on. After the pre-test, the researcher modifies the instrument if necessary according to what the respondents have said. The pre-test results were not included in the research because pre-test was only used to see if the questions are well constructed or not in a manner that they understand and able to provide relevant information. Therefore, during pretesting some of questions were not well understood by the respondents, where researcher had to give further explanation so that the respondents are able to answer the questions with understanding.

3.9 Validity and reliability

3.9.1 Validity

Polit and Beck (2017) define validity as the degree to which an instrument is measuring the construct it is supposed to measure. Validity addressed the appropriateness, meaningfulness, and usefulness of the specific inferences made from instrument scores. It has to do with true strength and value (Burns & Grove, 2017). Face validity and content validity was ensured in this study.

3.9.2 Reliability

According to Burns and Grove (2017) reliability is defined as the extent to which an instrument consistently measured a concept. Reliability relates to the precision and accuracy of the instrument. If used on a similar group of respondents in a similar context, the instrument should yield similar results (Brink, 2006). The researcher ensured reliability by using Stability (test-retest) by giving the same respondents the very same questionnaire on two occasions with 3 days apart to see if the response given at first was the same as the second time. If the respondents don't respond the same way it means the instrument is not reliable and it has to be corrected. The reason to give the questionnaire to respondents on different occasions is to prevent memorization by the respondents.

3.9.3 Content validity

Content validity refers to the extent to which a measuring method includes all the measure elements relevant to the construct being measured (Polit & Beck, 2017). The researcher used a literature review of related studies to ensure that the questionnaire covers all essential aspects that need to be covered about the caregiver's knowledge regarding diarrhoea. The questionnaire was presented to experts so that it can be modified using feedback received to ensure sampling adequacy of the content of the instrument.

3.9.4 Face validity

The researcher ensured validity by presenting the questionnaire to the Supervisor, presentation in a Departmental Seminar, and the School of Health Sciences Higher Degree Committee. The researcher corrected the instrument according to the inputs made by experts.

3.10 Plan for data collection

Data collection is a systematic means of gathering information related to the research purpose or questions (Burns & Grove 2017). Data was collected for two to three months using a self-administered structured questionnaire. The data collection period depended on the availability of respondents which was January to February 2021. The researcher got permission from the manager of the clinic via the district manager see appendix D. The prospective respondents consulting clinic was recruited to participate in the study following the explanation made by the researcher on the purpose of the study. Detailed information about the study was given to the caregivers using their home language before consent to participate. An information letter was given and explained to the respondents. Those who were willing to participate were given an informed consent form where they had agreed to be part of the study by signing. The questionnaire was distributed to the respondents by the researcher. The respondents were provided with a pen and given time to read and complete the questionnaires, in the presence of the researcher and those who do not able to read and write was not be part of the study. The researcher collected the questionnaires on the same day to minimize non – responses. The researcher followed COVID-19 regulations to prevent the spread of infections by sanitizing the respondents, put on mask covering mouth and nose, providing the respondents with masks, and maintaining of 1, 5 meter distance apart in the private room where they were filling in the questionnaire.

3.11 Plan for data management and analysis

Data management starts during the process of data collection wherein data were kept under lock and key. Collected data will be kept for a period of three to five years for verification.

Data analysis is the systematic organization and synthesis of research data and, in quantitative studies, the testing of hypotheses using those data (Polit & Beck, 2017). To manage the data, all the completed questionnaires was kept safe for confidentiality. Only the researcher and supervisor had access to the research information. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 26.0. Cleaning of data was done to eliminate errors and inconsistencies. Descriptive statistics was used to describe and summarise data about the caregiver's knowledge of factors that contribute to diarrhoeal

diseases in children under five years. For data to be more meaningful frequency tables, descriptive and inferential statistics was used to analyse and present the data.

3.12 Ethical considerations

Ethical consideration is important in a way that ethical procedures should be followed when conducting research. The researcher should explain how he/she intends to follow ethical issues in the research proposal (Brink, et al., 2012). The following ethical measures were considered in this study.

3.12.1 Permission and Ethical clearance

The research proposal will be presented at the Department of Health and then to the School of Health Sciences Higher Degree Committee for quality assurance. Thereafter, it was submitted to the University of Venda Higher Degrees Committee for quality assurance and approval. An application was made to the Research Ethics Committee of the University of Venda for ethical clearance and then to the Department of Health for data collection in health facilities. The researcher made an appointment with the manager of the clinic where the permission was requested in writing in Annexure D.

3.12.2 Anonymity

Anonymity means literally ‘without a name’; in research, the removal of all names and identifiers from data is done to protect identities of participants (Burns & Grove, 2017). In this study, anonymity was achieved by not putting names on the questionnaire. The researcher at the end should not be able to link any information to any respondents.

3.12.3 Confidentiality

Confidentiality refers to protection of study participants so that the data provided are never publicly divulged (Polit & Beck, 2017). To ensure confidentiality the researcher put all information and consent forms signed by the respondents in a safe place under a locked key so that no one can have access to them and link their names with questionnaires.

3.12.4 Privacy

Privacy refers to the freedom of an individual to determine the time, extent, and general circumstances under which private information will be shared with or withheld from others (Burns & Grove, 2017). The privacy of the respondents is important when data collected. Privacy was maintained by using code numbers for respondents’ identities so that even the researcher would not be able to correlate the information to the respondents.

3.12.5 Informed consent

Informed consent is an ethical principle that requires researchers to obtain people's voluntary participation, after informing them of possible risks and benefit (Polit & Beck, 2017). An information letter (Appendix: F) which was explained the nature of the study, purpose, objectives, what is expected from the respondents, and how the respondents' rights was maintained, then provided to the respondents by the researcher before signing the consent form. Respondents were informed of their right to withdraw from the study at any time and that there would not be any consequences. Respondents were addressed not to expect any kind of remuneration. The respondents were not expected to cover any cost in the study and they were also be informed that the information given would be sent to the library after data analysis so that other people can use as a reference and for knowledge, after explaining all that, respondents were decided to be part of the study or not by signing or not signing the consent form.

3.13 Delimitation of the study

Delimitation is a choice made by the researcher which should be mentioned, they describe the boundaries that the researcher has set for the study. In this study, the researcher was only focus on the caregiver's knowledge of factors that contribute to diarrhoea under 5 years of age.

3.14 Plan for dissemination of results

The completed report will be peer-reviewed and a copy submitted to the University of Venda library for academic use. The findings of the study will be disseminated in the national and international conferences. Results will also be published in the form of articles in accredited journals.

3.15 Summary

The research methodology which includes the study setting, research design, population, sampling, data collection instrumentation, pre-test, reliability and validity, data collection process and data analysis were discussed. Therefore, in chapter four (4), data analysis, interpretation and discussion of the findings are discussed.

CHAPTER 4
DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF FINDINGS

4.1. Introduction

The previous chapter discussed the research methodology used for this study. This chapter discusses the results of the statistical analysis of the quantitative data derived from the completed questionnaires. The data focused mainly on caregiver's knowledge of factors that contribute to diarrhoeal diseases among children at selected clinics, in the Vhembe district of the Limpopo Province. The outcome presented in this chapter reflect data of all caregivers who participated in the study.

The statistical information was made from a sample of 182 participants with a 10% (20) non-response rate, therefore there were 165 respondents who completed the questionnaires. Some of the respondents chose not to complete certain items within specific sections, presumably because of unknown reasons. The percentages were calculated on the number of responses to each item. Data analysis was done by a statistician at the University of Venda, using SPSS version 6.0. Frequencies table, percentages and total percentages were used to describe different variables. Graphic presentations as well as tables were used to show relevant values. The researcher chose despondence's age group of 18-35 years because it is the highest child bearing age in South Africa, and thus most caregivers are likely to be in that age range.

Researchers can use quantitative analysis to interpret raw data and quantity as well as the value of variables by counting and measuring them in order to provide answers to research objectives and draw conclusions from the data (Creswell, 2015). The response was therefore presented according to the sections on the questionnaires A to E:

Section A - demographic data

Section B - household.

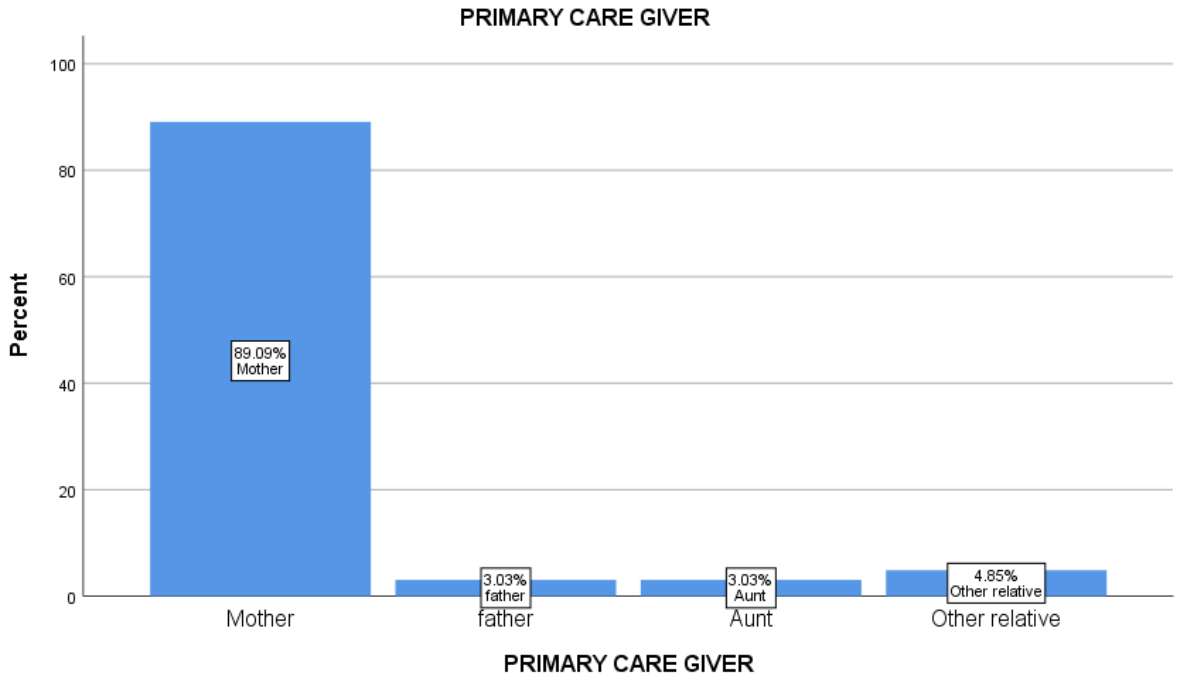
Section C - assessing caregiver's knowledge on factors contributing to diarrhoea among children under 5 years.

Section D - questions related to feeding/diet.

Section E - questions related to management

4.2 Demographics

Figure 2. Primary caregivers



Out of 165 respondents who completed the questionnaire, 89.1% were mothers, 3% were fathers or aunts, and 4.8% were other relatives. The findings reveal that all primary caregivers category responded in the study, but the majority of the respondents were mothers and this shows that they are the ones who take care more about their children than other category and seems to be hands on when it comes to look after their children.

Table 3. Age of primary caregivers

		Frequency	Percent	Valid Percent
Valid	18-25	67	40.6	40.6
	26-30	45	27.3	27.3
	30-35	30	18.2	18.2
	35 and Above	23	13.9	13.9
	Total	165	100.0	100.0

Table 3 shows an analysis of respondents ages, 67 (40.6%) were from 18 to 25 years, 45 (27.3%) were from 26 to 30 years, 30 (18.2%) were from 30 to 35 years and 23 (13.9) were

from 35 years and above. The findings reveal that all age groups responded in the study, but the largest respond was from those of 18 to 25 years age distribution was important in this study for identification of the ages of the respondents who completed the questionnaire and most participated.

According to the findings of this study, age is a contributing factor to diarrhoea, and women under the age of 18 are one of the contributing causes to child diarrhoeal disease because most of them are first-time mothers who lack expertise and maturity in child care. According to a study done by Ansari, et al. (2012) the majority of the mothers in their study were between the ages of 16 and 30.

Table 4. Religion of primary caregiver

RELIGION					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
	Christian	151	91.5	92.6	92.6
	Traditional	11	6.7	6.7	99.4
	Other	1	0.6	0.6	100.0
	Total	163	98.8	100.0	
Missing	System	2	1.2		
Total		165	100.0		

Several Christian faiths were represented in the sample, as seen in table 4.2.3, but no one represented the Moslems. Only two respondents did not respond to questions, with 151 (91.5%) being Christian, 11 (6.7%) being traditional, and 1 (0.6%) being other faith. Similar findings were found in a study done in Nigeria, by Olatona, et al (2016) who claimed that the majority of the respondents were Christians (85.4 percent). It was a key factor contributing to diarrhoea since most of them believed in the curative power of holy water and few followed proper diarrhoea management and took their children to the hospital during diarrhoea episodes. This is because most faith groups promote prayer as a supplement to medical therapy. Since majority of respondents in this study were Christians, therefore the researcher concluded that religion is a contributing factor to diarrhoea. Some religious groups, on the other hand, go even further, teaching that specific medical treatments are forbidden or that members should refuse medical treatment in favour of prayer.

Table 5. Educational level of primary caregivers

EDUCATION LEVEL					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
	no formal education	13	7.9	7.9	7.9
	Primary	7	4.2	4.2	12.1
	Secondary	75	45.5	45.5	57.6
	Tertiary	70	42.4	42.4	100.0
	Total	165	100.0	100.0	

Out of 165 respondents who completed the questionnaire, 13 (7.9%) had no formal education 7 (4.2%) have primary education level, 75 (45.5%) have secondary educational level and 70 (42.4%) have tertiary education level. It was necessary to include educational qualifications in this study for the researcher to know the educational background of the respondents in order to know the knowledge and understanding that the respondents have. The findings show that there is slightly difference between those who had secondary and tertiary educational level, those who had no formal education and those with only primary education reflect the same knowledge regarding factors contributing to diarrhoea.

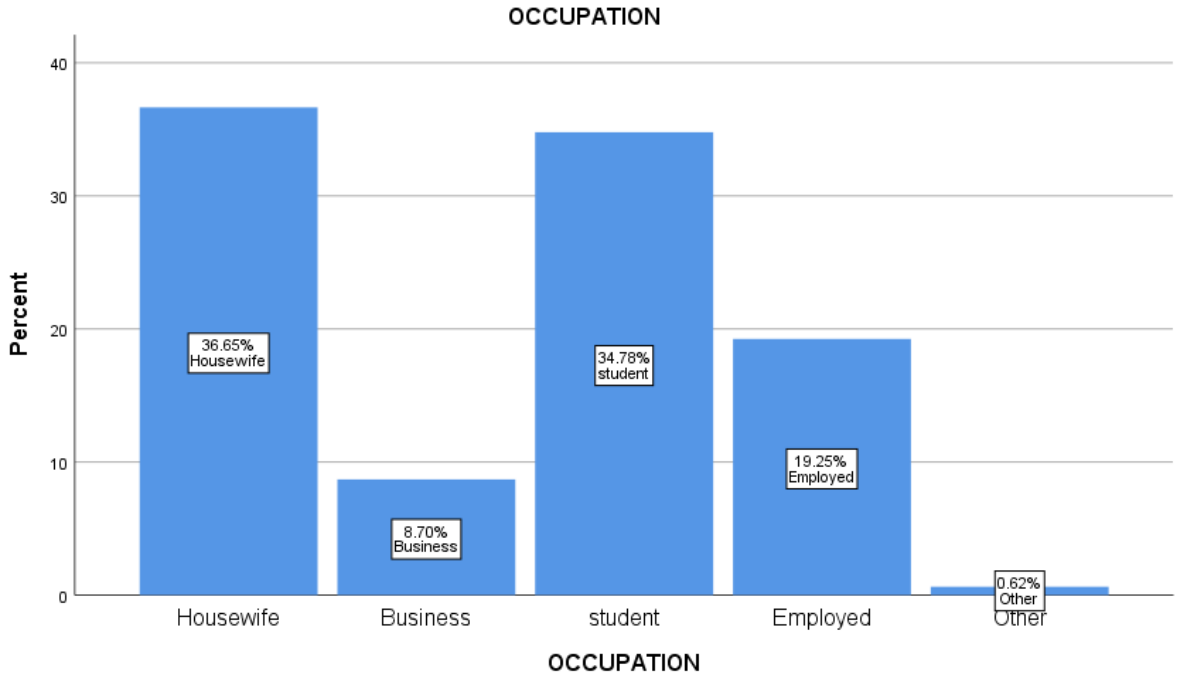
The researcher found that maternal education level was significantly associated with cases of childhood diarrhoea diseases. Furthermore, the study revealed that children with mother who had no formal education were more likely to develop diarrhoea. This is in line with Namutebi, et al. (2016) who stated that lack of maternal education was one of the major determinants of persistent diarrhoea among children. This could be because educated mothers or caregivers are more informed about hygiene practices that reduces the chances of diarrhoea. Bachrach, et al. (2015) concur with this findings when he revealed that maternal education was significantly associated with diarrhoea. This is because education is a key determinant of the lifestyle and status an individual enjoys in a society. Mother's educational attainment is inversely related to childhood mortality levels; children of less educated mothers generally have higher mortality rates than those born to more educated mothers.

Table 6. Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	110	66.7	66.7	66.7
	Married	48	29.1	29.1	95.8
	Divorced	2	1.2	1.2	97.0
	Widow	5	3.0	3.0	100.0
	Total	165	100.0	100.0	

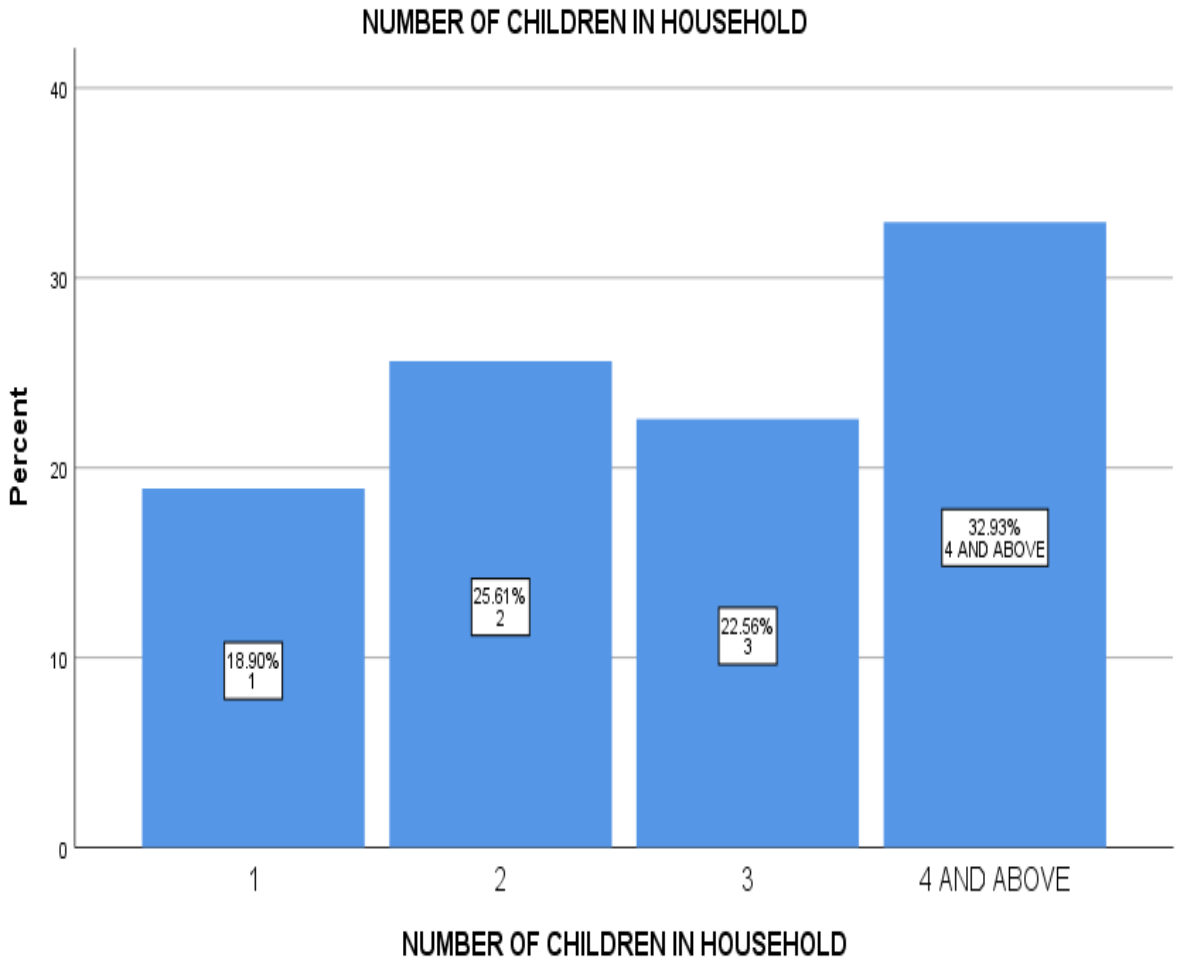
Table 6 outlines that out of 165 respondents, 110 (67.7%) were single, 48 (29.1%) were married, 2 (1.2%) were divorced, 5 (3.0%) were widow. The findings reveal that more than half of respondents were single (67%). These findings were consistent with those of Wamalwa (2015), who discovered that the odds of diarrhoea were higher in children of single mothers than in children of married mothers. The single mothers were either widowed, divorced, or dropped out of school as a result of a teenage pregnancy. Some mothers leave their children with caregivers who are untrained in childcare and are underpaid as they look for odd jobs to meet the family's needs because they are the sole breadwinner. Some people who cannot afford caretakers bring their infants to work, particularly those who are self-employed, such as street vendors; however, most of these environments are unsuitable for children and are often filthy, putting the infants at risk of diarrhoea. Due to a lack of time, these mothers also breastfeed their infants less frequently.

Figure 3. Occupation of Primary caregivers



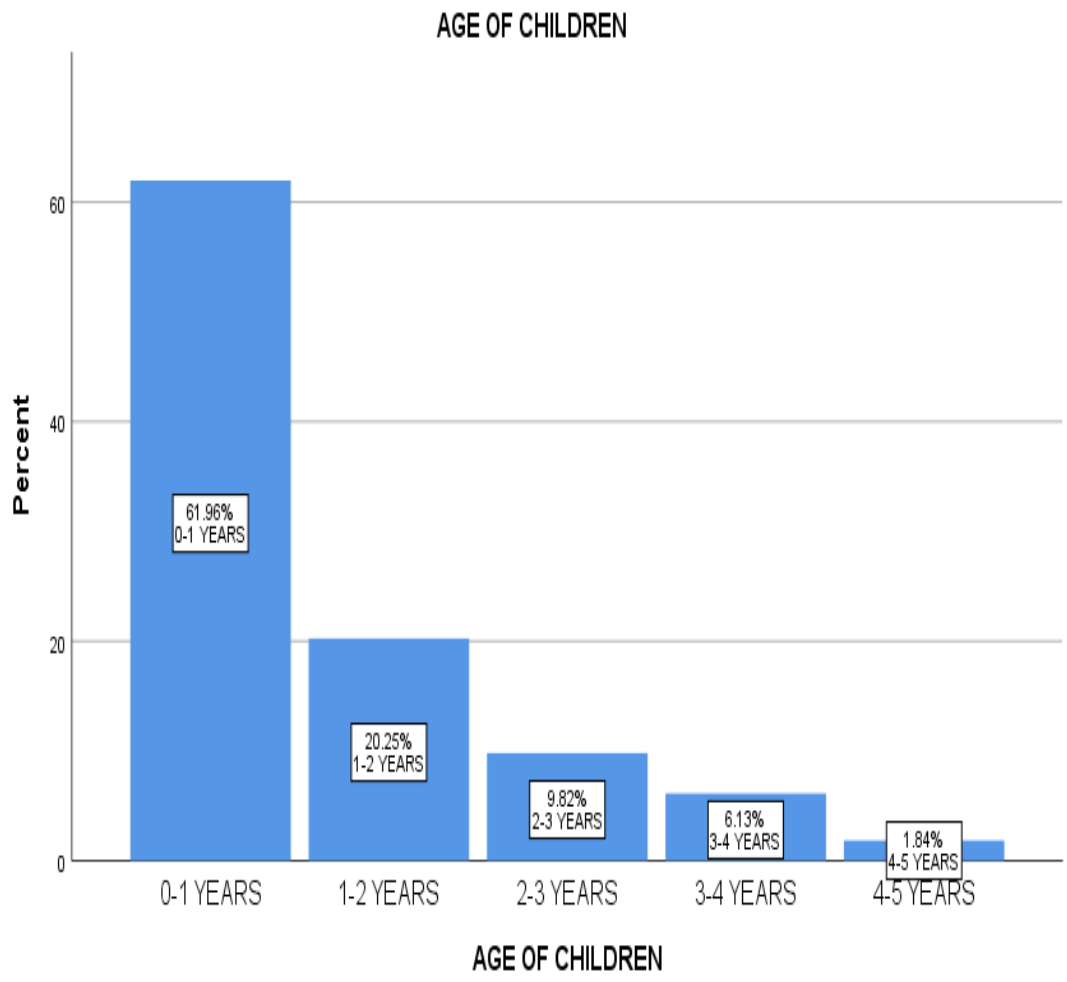
Occupation of the primary caregivers is highlighted in the above figure, and 59 (35.8%) were housewives, 14 (8.5%) have a business, 56 (33.9%) were students, 31 (18.8%) were employed, and 4 (0.6%) respondents did not respond to questions. According to the findings, the majority of the unemployed caregivers were housewives and those mothers get to spend more time at home caring for the children and supervising what they eat and the hygienic practises to reduce diarrhoea. Similarly, Karambu, et al. (2014) discovered that maternal employment status was significantly associated with cases of childhood diarrhoea diseases. Mutalik and Raje (2016) maintain that a mother is a primary caregiver of the family and most importantly teaching children about proper hygienic practices. Children whose mothers were employed were more likely to develop diarrhoea, according to (Desta, et al., 2017). This could be because mothers who currently work (employed) might not have enough time to care their children since they spend most of their time at work to increase family income while mothers who do not work currently usually have time to care their children and can minimize the exposure of their children from contaminated objects.

Figure 4. Number of children living in the household



The above figure 3 indicates that 31 (18.8 %) of the respondents have one child, 42 (25.5 %) have two children, 37 (22.7 %) have three children, and 54 (32.7 percent) have four or more children. The fact that most respondents had four or more children indicates that most caregivers had experience caring for a child and are able to manage those who have diarrhoea. However, the number of children living in a household can be linked to a children's diarrhoea episode especially if there are more than four children of the same age in a household with only one caregiver, it's difficult to monitor those children especially when they are playing as children use to share everything including contaminated foods. As a result, having more children of the same age in a household could be a significant contributor to diarrhoea.

Figure 5. Age of the children



Out of 165 respondents who completed questionnaires, 101 (61.2 percent) had children aged 0-1 years, 33 (20.0 percent) had children aged 1-2 years, 16 (9.7 percent) had children aged 2-3 years, 10(6.1 percent) had children aged 3-4 years, and 3(1.8 percent) had children aged 4-5 years. According to the above bar graph, the majority of caregivers who participated had children under the age of one year, which is the age group that is mostly prone to diarrhoea due to a variety of factors such as mixed feeding, poor feeding techniques, and other unsanitary practices. As a result, the researcher concluded that the child's age is more likely to be associated with diarrhoea.

The findings were similar to those of Avisek, et al. (2015) who found that the majority of study participants had children under the age of one year, and the prevalence of diarrhoea was highest in the 7-12 month age group, followed by the 13-24 month age group.

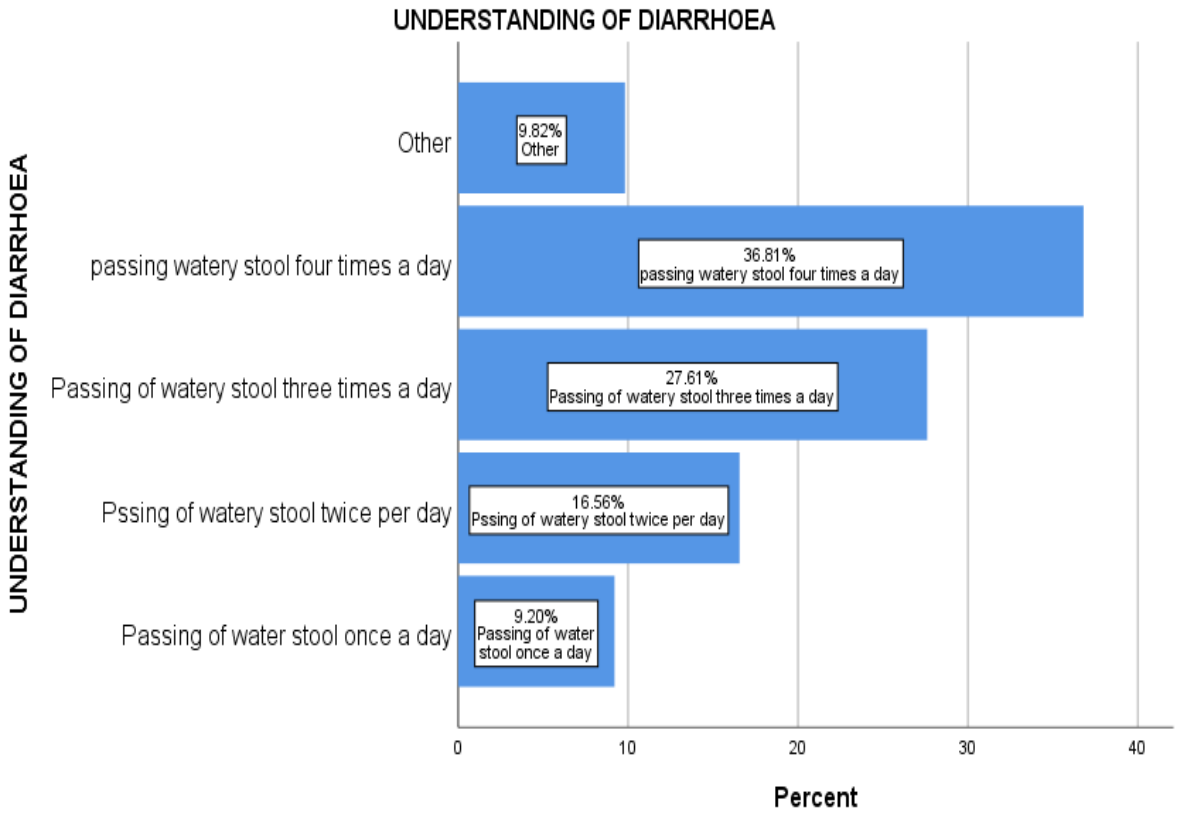
Table 7. Assessing level of knowledge among caregivers regarding factors contributing to diarrhoea disease amongst children under 5 years of age.

		PRESENCE OF FAECES		PRESENCE OF FLIES NEAR HOUSEHOLD		PRESENCE OF RUBBISH NEAR HOUSEHOLD	
		Yes	No	YES	NO	Yes	No
PRIMARY CARE GIVER	N %	10.3%	89.7%	39.7%	60.3%	11.0%	89.0%
	Count	15	131	58	88	16	129

Out of 165 primary caregivers, 90% (131) indicated that there is no presence of faeces around or near the household, and only 10 % (15) indicated that there is presence of faeces around or near the household, which gave the results of less chance diarrhoeal transmission. Out of 165 primary caregivers, 60 % (88) indicated that there is no presence of flies around or near the household, whereas 40 % (58) said there is a presence of flies around or near household. Out of 165 primary caregivers, 90 % (149) indicated that there is no presence of rubbish around or near the household, whereas 11% (16) indicated that there is a presence of rubbish around or near household. This indicates that the absence of flies is a good indicator that could not lead one to diarrhoea because the environment is free from faeces and rubbish. Furthermore, the majority of mothers and caregivers report that there were no faeces or flies present, indicating that the surroundings were clean. As a result, the caregivers here demonstrated that they have knowledge and are aware that faeces can induce diarrhoea and that faeces attract flies, which can contaminate food and cause diarrhoea.

The current study's results are similar to those of Das (2018) who found that faeces and flies were the most common contributory factors to diarrhoea, and that the participants were aware that faeces, garbage, and flies were all contributing factors. However, health education should be offered to the small minority of people who still lack knowledge and are unaware that flies, garbage, and excrement contribute to diarrhoea.

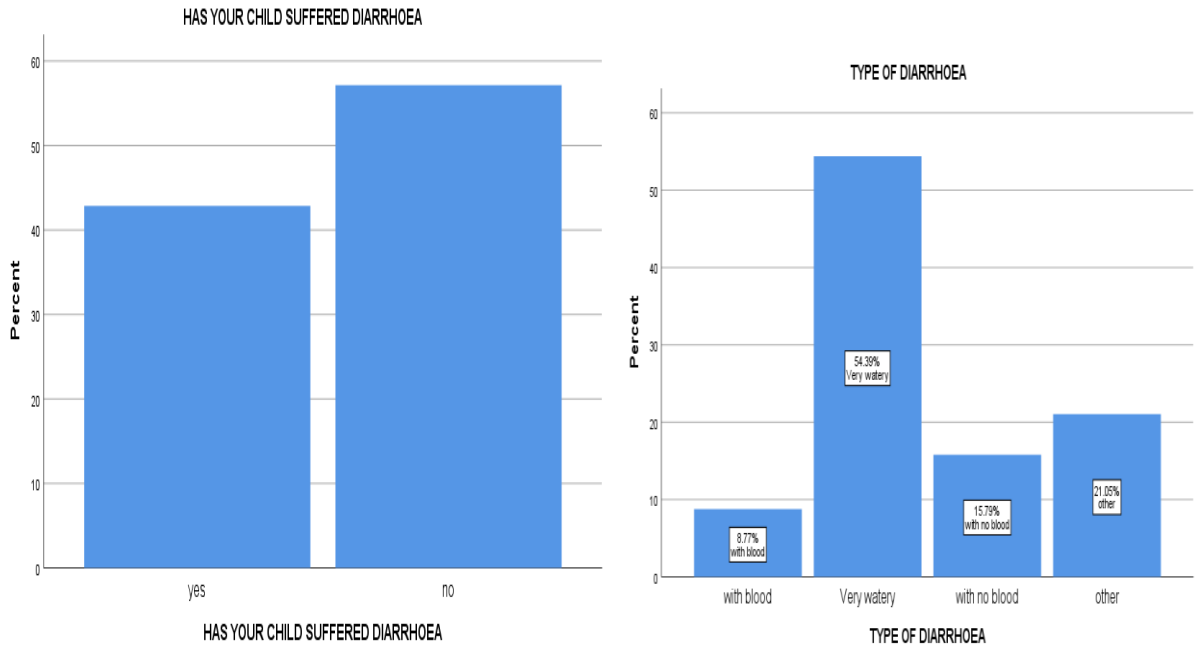
Figure 6. Understanding of diarrhoea



Most of the caregivers 36.81% (61) defined diarrhoea as the passing of watery stools four times a day, followed by 27.61% (46) of caregivers who defined diarrhoea as a passing of watery stools three times a day, while 16.56% (27) of caregivers defined diarrhoea as a passing of stools twice per day and a minority of caregivers 9.20% (15) defined diarrhoea as a passing of watery stools once per day. Most of the respondents 74.24% (122) defined diarrhoea correctly as is the passing of watery stools from three or more times per day according to the WHO organization while 25.76% (42) of respondents defined diarrhoea incorrectly.

The findings of the results shows that most caregivers had knowledge about diarrhoea, however there is still a low percentage of caregivers who need to be educated and be provided with pamphlets regarding diarrhoea. The current findings are contrary to studies done by Ogbeyi, et al. (2016) in Nigeria which highlighted that a minority of the respondents had fair knowledge of the correct definition of diarrhoea in a child, while a majority had poor knowledge of the definition of diarrhoea. As a mother, having knowledge and being able to define diarrhoea is very important because if a person understands and defines diarrhoea, they will be able to manage or prevent it.

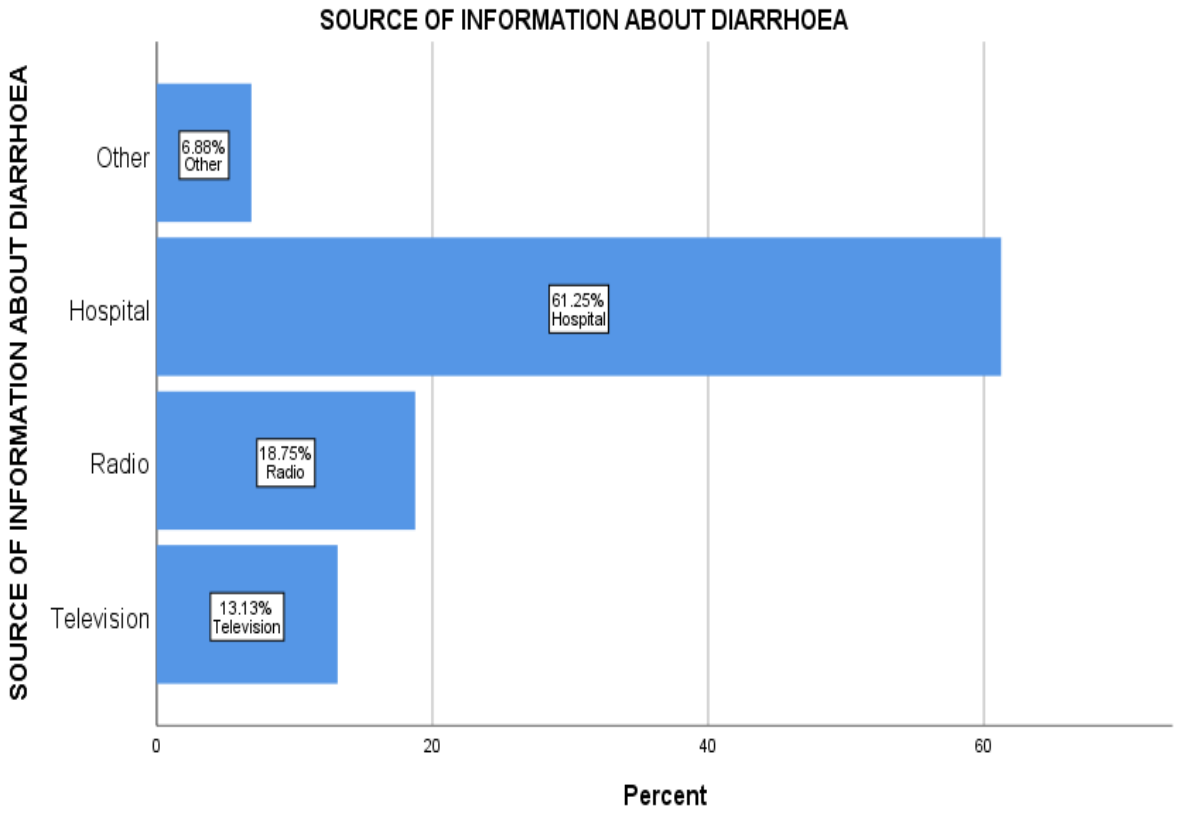
Figure 7. Has your child suffered diarrhoea and type of diarrhoea



Out of 165 caregivers who completed questionnaire, 43% said their child had suffered from diarrhoea in the past 2 weeks prior to the study, and 57% reported that their child did not suffer from diarrhoea. The current study's findings show that there are many contributing factors to diarrhoea in children in this area, as most children have been reported to have diarrhoea in the last two weeks. This shows that diarrhoea is still a problem, and caregivers and mothers should be educated on how to prevent and manage its occurrence. As shown in the above bar graph, 54.39% of diarrhoea was very watery stools that their child had suffered from. 15.79% of diarrhoea was with no blood, and 8.77% of diarrhoea with blood.

The findings show that most of the children had experienced very watery stools and it is very important to identify the types of tools in order to give the correct treatment for particular type of diarrhoea. The study done in Soweto Namuwongo, by Kalibbala (2012) indicates that the majority of caregivers reported that one of their children had experienced an episode of diarrhoea in the last two weeks towards the study. This shows that indeed diarrhoea is still a problem in under five children and needs a special attention to reduce this growing rate.

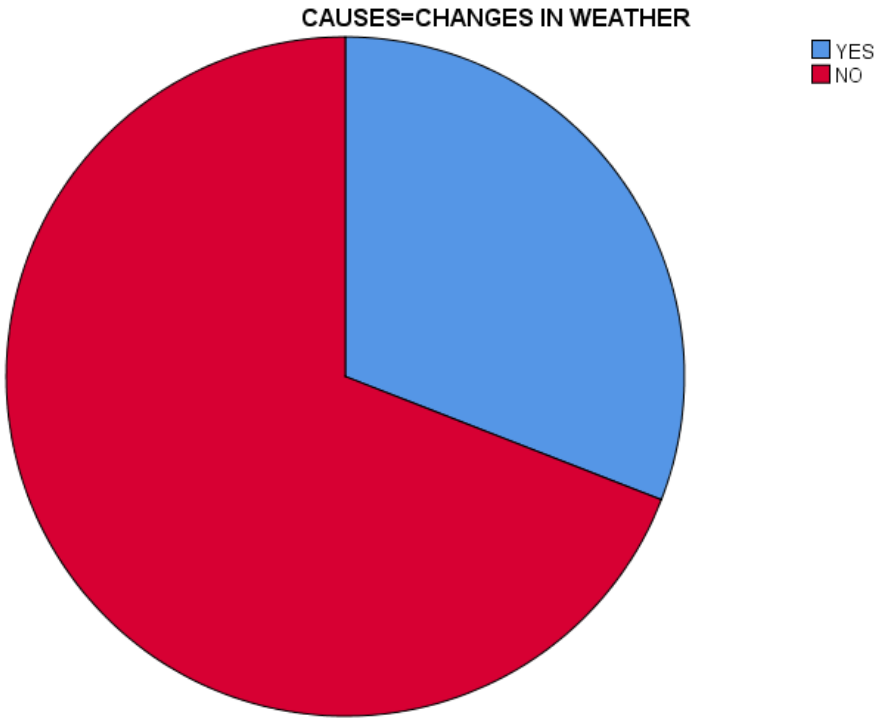
Figure 8. Sources of information about diarrhoea



As shown from above figure 5, most of the respondents n=165 (61.25%) received their information from the hospital about diarrhoea, (18.75%) received their information from radio and only (13.13%) received information from the television, while (6.88%) received information about diarrhoea from other sources or elsewhere. This was a good indication which shows that most people read pamphlets administered at the hospitals and listen to health talks given by the healthcare workers in the hospitals. This is contrary to the study done by Kalibbala (2015) who revealed that only (14%) of respondents indicated that their main sources is not radio while majority indicated that indeed they use radio (86%), newspaper (94%), clinic (88%), school (95%), clinic staff (89%) and other sources (88%).

The source of information plays a huge role in the prevention and management of diarrhoea. In this study, most mothers responded that they get information from the hospital, which means that they get this information when they go to consult and when the baby is already sick, so a poor source of information can be a contributing factor to diarrhoea, more ways to educate mothers and caregivers on the prevention and management of diarrhoea are needed.

Figure 9. Causes = change in weather



The results in figure 8 shows that 51(30.9%) of the caregivers reported that changes of weather can cause diarrhoea, while 114(69.1%) of caregivers reported that changes of weather cannot cause diarrhoea. The majority of caregivers disagreed that changes of weather can cause diarrhoea especially when day is too hot some of children suffer from diarrhoea due to such extremely hot weather conditions Empirically, many studies have explained that changes in weather, be it temperature, rainfall, etc., have an influence on the incidence of diarrhoea. A study done by Mertens (2019) highlights that there was an increase in the incidence of diarrhoea as a result of heavy rainfall and poor climate change in rural India of Tamil Nadu. Another study, by Horn (2018) in Mozambique, had similar findings that rainfall has a relationship with the incidence of diarrhoea. Furthermore, a study done in South Africa by Musengima, et al. (2021) indicates that an increase in temperature of 5◦C at the minimum and maximum temperatures within a week could lead to an increase in diarrhoea cases, by 40% and 31% in each season, respectively. This literature shows that weather is one of the contributing factors to child diarrhoea and the respondents lacked knowledge therefore they should be educated that weather is also a contributing factor.

Table 8. Causes = dirty water

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	97	58.8	58.8	58.8
	NO	68	41.2	41.2	100.0
	Total	165	100.0	100.0	

Out of 165 primary caregivers who completed questionnaires 97 (58.8%), agreed that dirty water can cause diarrhoea in children while 68 (41.2%) disagreed that dirty water does not cause diarrhoea. The results show that 41% of caregivers show lack of understanding about the cause of diarrhoea in children. However, nurses should give health talks about diarrhoea in detail before they start immunisation vaccines on daily basis because drinking dirty and contaminated water is one of the most leading contributory factors to diarrhoea (WHO, 2017). The results of this study concur to those of Nguyen (2021) who found that diarrhoea was caused by dirty, contaminated water and poor sanitation. According to Levy's (2015) study, children who lived in households with continuously low water quality had the highest incidence of diarrhoea.

Figure 10. Causes = bad spirits

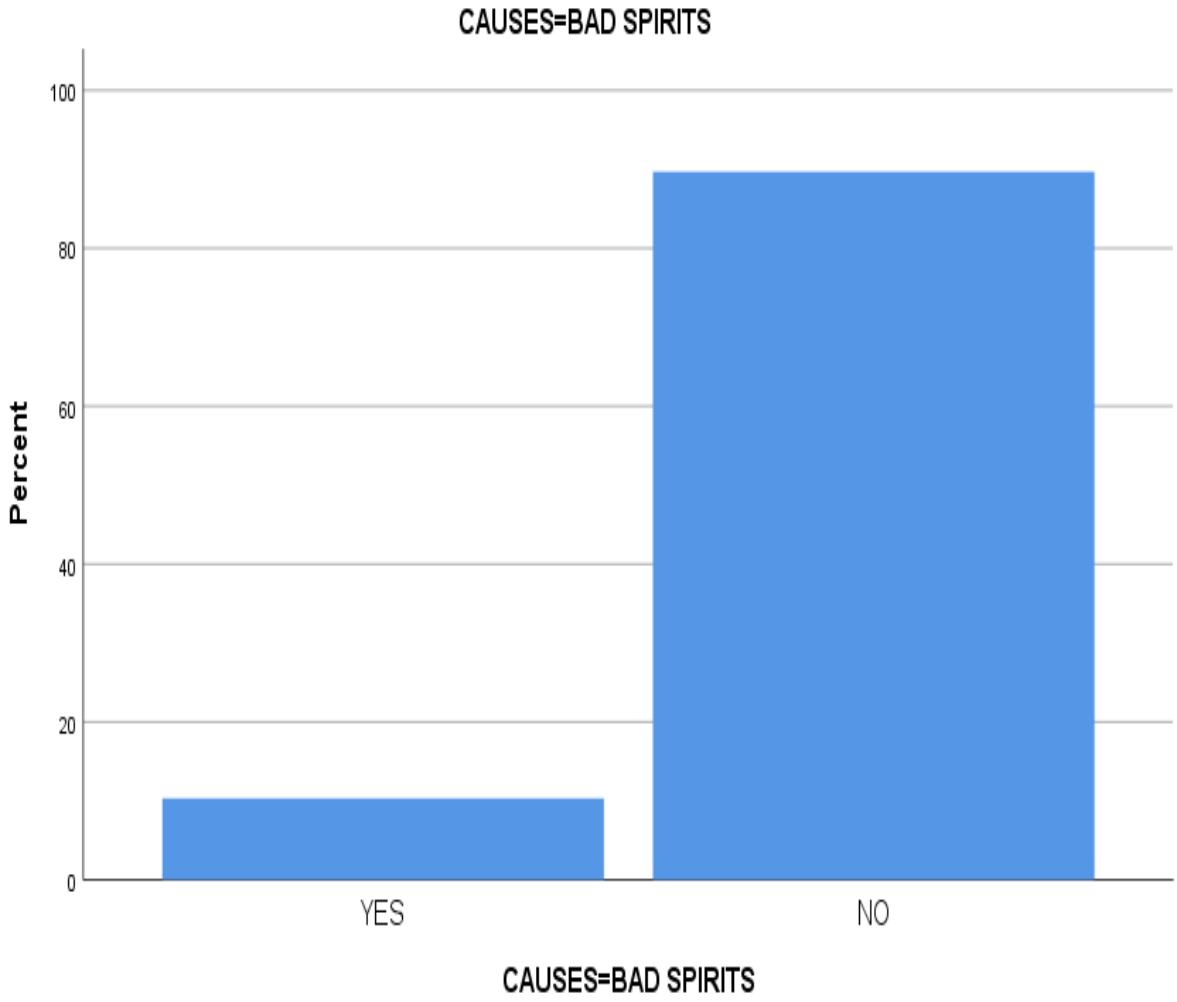


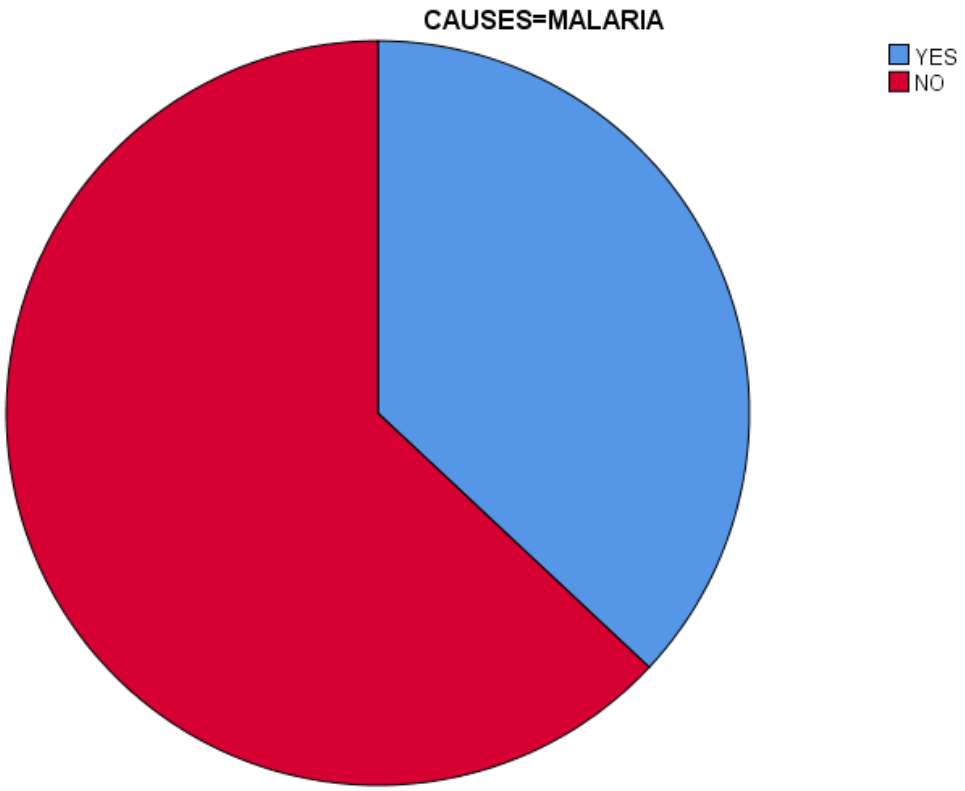
Figure 9 indicates that out of 165 respondents who completed the questionnaire, 17(10.3%) disagree that bad spirits can cause diarrhoea, whereas 148 (89.7%) strongly agree that bad spirits can cause diarrhoea in children, which shows a good knowledge of caregivers regarding factors causing diarrhoea in children. Contrary to the study findings, beliefs in supernatural causes of diarrhoea had also been reported in a study in South Africa where supernatural forces were perceived to cause illnesses among the very young and vulnerable infants (Kauchali, 2016). Herbal medicine had been used by some of the caregivers and was reported as the only treatment of diarrhoea perceived to be caused by supernatural forces.

Table 9. Causes = poor personal hygiene

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	69	41.8	41.8	41.8
	NO	96	58.2	58.2	100.0
	Total	165	100.0	100.0	

Out of 165 primary caregivers who completed questionnaire, 69 (41.8%) agree that poor personal hygiene can cause diarrhoea in children, while 96 (58.2%) disagree that poor personal hygiene can cause diarrhoea. The results show that more than half of caregivers did not consider poor personal hygiene as a contributing factor. Therefore, it was an indication that the mothers and caregivers lacked knowledge on the contributory factors to diarrhoea because poor personal hygiene is one of the most contributory factors of diarrhoea similar studies which were done in Gambia, by Sillah (2015) highlighted that few mothers and caregivers thought diarrhoea is caused by poor personal hygiene.

Figure 11. Causes = malaria



Out of 165 primary caregivers who completed the questionnaire, 61(37.0%), agree that malaria can cause diarrhoea in children, while 104 (63.2%) disagree that malaria can cause diarrhoea. Because malaria can cause diarrhoea, the results show that more than half of caregivers have a lack of understanding about the cause of diarrhoea in children. A study conducted by Ohlin (2013) reports that the major symptoms for malaria are diarrhoea and vomiting. Furthermore, a study conducted by Simen-Kapeu, et al. (2021) states that malaria is one of the major causes of diarrhoea in children under the age of five. The researcher discovered in this current study that most mothers and caregivers had limited knowledge of malaria as a contributing factor to diarrhoea.

		AGE				PRIMARY CARE GIVER			
		18-25	26-30	30-35	35 and Above	Mother	father	Aunt	Other relative
		Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %
IS CHILD BREASTFEEDING	Yes	71.2%	60.0%	65.5%	56.5%	64.1%	80.0%	60.0%	75.0%
	No	28.8%	40.0%	34.5%	43.5%	35.9%	20.0%	40.0%	25.0%
METHOD OF BREASTFEED	Exclusive Breastfeeding	42.6%	50.0%	68.4%	35.3%	50.9%	33.3%	33.3%	12.5%
	Mixed feeding	57.4%	50.0%	31.6%	64.7%	49.1%	66.7%	66.7%	87.5%
BREASTFEEDING SCHEDULE	1-2 times per day	9.4%	6.5%	5.3%	6.3%	7.6%	0.0%	0.0%	12.5%
	3-4 times per day	20.8%	16.1%	10.5%	43.8%	20.0%	0.0%	66.7%	25.0%
	4-5 times per day	9.4%	6.5%	10.5%	12.5%	10.5%	0.0%	0.0%	0.0%
	5 and above	60.4%	71.0%	73.7%	37.5%	61.9%	100.0%	33.3%	62.5%
WHAT CHILD IS FED	Formula milk	64.4%	57.6%	50.0%	66.7%	56.9%	33.3%	100.0%	100.0%
	Tea and water	22.2%	39.4%	35.0%	33.3%	33.3%	66.7%	0.0%	0.0%
	None	13.3%	3.0%	15.0%	0.0%	9.8%	0.0%	0.0%	0.0%
SOURCE OF	Spring water	17.0%	22.6%	16.7%	16.7%	19.4%	0.0%	40.0%	0.0%

WATER FOR BREASTFEED	Borehole	21.3 %	16.1 %	16.7 %	25.0 %	18.3 %	50.0 %	20.0 %	25.0 %
	River	53.2 %	58.1 %	66.7 %	50.0 %	57.0 %	50.0 %	20.0 %	75.0 %
	tap water	8.5 %	3.2 %	0.0 %	8.3%	5.4 %	0.0 %	20.0 %	0.0 %
PREPARING FORMULA MILK FEEDING	washing hands	27.7 %	23.3 %	35.0 %	15.4 %	25.5 %	33.3 %	60.0 %	12.5 %
	Clean and sterilise bottle	27.7 %	36.7 %	35.0 %	46.2 %	34.0 %	33.3 %	0.0 %	50.0 %
	Boiled water	40.4 %	36.7 %	30.0 %	38.5 %	37.2 %	33.3 %	40.0 %	37.5 %
	None	4.3 %	3.3 %	0.0 %	0.0%	3.2 %	0.0 %	0.0 %	0.0 %
KIND OF FOOD GIVEN TO BABY	Soft porridge	39.4 %	31.1 %	44.8 %	47.8 %	40.0 %	20.0 %	20.0 %	50.0 %
	Purity	12.1 %	13.3 %	6.9 %	0.0%	10.3 %	0.0 %	20.0 %	0.0 %
	breast feed only	33.3 %	35.6 %	24.1 %	17.4 %	30.3 %	40.0 %	0.0 %	37.5 %
	Beans	3.0 %	2.2 %	0.0 %	4.3%	2.1 %	20.0 %	0.0 %	0.0 %
	Potatoes	1.5 %	0.0 %	3.4 %	0.0%	1.4 %	0.0 %	0.0 %	0.0 %
	Porridge	3.0 %	2.2 %	6.9 %	17.4 %	4.1 %	0.0 %	40.0 %	12.5 %
	Other	7.6 %	15.6 %	13.8 %	13.0 %	11.7 %	20.0 %	20.0 %	0.0 %
DO YOU GIVE BABY ANYTHING TO DRINK	Yes	68.7 %	66.7 %	69.0 %	73.9 %	69.2 %	40.0 %	100.0%	62.5 %
	No	31.3 %	33.3 %	31.0 %	26.1 %	30.8 %	60.0 %	0.0 %	37.5 %

Table 10. What the child fed with and type of food given to the baby.

The study revealed that most of caregivers still exclusively breastfeeding their children which is good because breastfeeding is important as it decrease the risk of diarrhoea to children and furthermore, other foods or fluids may damage a young baby's gut and make it easy for infections to get into the baby's body. On the other hand, some of those who were still breastfeeding, were found to be mixed feeding as depicted from the above bar graph. More than half 52.50% of caregivers opted mixed feeding while 47.50% of caregivers opted exclusive breastfeeding. Mixed feeding was seen to be a contributing factor to diarrhoea because it put a child to infections which causes a child to suffer from diarrhoea.

The literature did not show any evidence of a specific diet during diarrhoeal disease. Recommendations made by WHO about nutritious food was non-specific but stressed the importance of breast milk. Wittenberg (2015) encourages caregivers to continue with a normal diet according to child's appetite, given in small frequent amounts depending on the tolerance as this reduces the risk of developing malnutrition, while Conkle, et al. (2016) report that the risk of diarrhoea increased in children who eat sweets and dairy products.

In the findings of the current study only a few people breastfed while majority of caregivers gave soft porridge only. It seemed to be a custom to feed children with sorghum soft porridge only, during the diarrhoea episodes. Giving sorghum only could place the diarrhoeal child to protein deficiency leading to kwashiorkor. Considering this, it shows that exclusive breast milk was not a priority for caregivers during diarrhoea episodes.

Out of 165 respondents who completed the questionnaire, 60.34% of caregivers said they were feeding their children with formula milk, 31.34% of caregivers were feeding their children with tea and water, while 8.62% of caregivers does not feed their children from none of above mentioned feeds. According to this research, the majority of caregivers was giving the infant formula milk, which is not recommended because it may worsen the diarrhoea especially for children below the age of two years. In contrast to the findings of this study, Khalili, et al. (2015) in Iran, indicated that 64 % of women breastfed their infants more extensively during diarrhoea episodes and 36% of the participants were utilizing formula during the diarrhoea episode". In Burkina Faso, 98.8% of diarrhoea affected children and continued to breastfeed throughout the duration of their illness (Wilson, et al., 2016).
Out of 165 respondents who completed the questionnaire, 39.26% were feeding their children with soft porridge, followed by 30.06% who were feeding their children with breast milk only,11.66% of caregivers were not feeding their children with other food, 9.82% of caregivers

were feeding their children with purity, 5.52% of caregivers were feeding their children with porridge, 2.45% of caregivers were feeding their children with beans while 1.23% of caregivers were feeding their children with potatoes. The results of this study show that most caregivers were feeding their children with variety of foods which had good nutrients and healthy in children under 5 years and which does not contribute to the increase in diarrhoea episodes. Although there were few mothers who mentioned giving the baby purity, it was quite alarming as purities has a lot of preservatives and if not followed properly could cause diarrhoea.

Majority of caregivers identified banana as a good food during diarrhoea, followed by 43 (26.1%) of rice which was also identified as good choice in older children. The question that arose was whether the caregivers were following adequate nutritional practices, such as exclusive breastfeeding from birth to six months, and the introduction of light solid foods at six months. A study by American Academy of Paediatrics indicated that 3 (1.8%) of caregivers identified sweets as least good food during diarrhoea followed by mangoes with 13 (7.9%), jungle oats was also identified as a good food during diarrhoea by 30 (18.2%), while 23 (13.9%) of caregivers identified apple as a good choice of food during diarrhoea. A study by Rabbani, et al. (2014) which focused on banana-supplemented diet in the home management of acute and prolonged diarrhoea in children, found that banana-supplemented diet hastened recovery of acute and prolonged childhood diarrhoea managed at home. Therefore, the results from this study shows that most mothers had knowledge on the proper feeding practices for a child when they have diarrhoea.

The study also revealed that 58.48% respondents were using water from the river for making formula milk feeding, followed by 19.44% of caregivers using water from borehole for making formula feeding whereas 18.52% of caregivers were using spring water for making formula feeding and 5.56% of caregivers were using water from tap. Water from the river is not considered safe if not boiled before use leading to diarrhoeal diseases among children under five years. However, the study also found that 37.27% of caregivers boiled water during preparation of formula milk feeding, followed by 33.64% of caregivers who clean and sterilise bottle during preparation of formula milk feeding and 26.36% of caregivers washing hands during preparation of formula milk feeding, while others do not do anything from the above mentioned preparation of formula milk feeding. Other findings from Wambete and Joseph (2016) indicated that about a third of the mothers/caregivers were not aware of any risk factors for diarrhoea contaminated water, exposure to an unclean environment, poor food hygiene, contaminated breast, overheated breast milk, dietary imbalances. Other findings in a study by McMahon, et al. (2013) showed that the respondents rarely discussed the role of open defecation or the importance of hand washing with soap and water in preventing diarrhoea.

Table 11. Action taken at home to treat diarrhoea

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nothing	8	4.8	5.1	5.1
	Take to clinic or doctor	96	58.2	61.5	66.7
	Give medicine at home	15	9.1	9.6	76.3
	Give ORS	27	16.4	17.3	93.6
	Visit traditional healer	8	4.8	5.1	98.7
	Other	2	1.2	1.3	100.0
	Total	156	94.5	100.0	
Missing	System	9	5.5		
Total		165	100.0		

From the above table, 96 (58.2%) of the caregivers would take the child to a clinic if the child got an episode of diarrhoea. The study shows that 27 (16.4%) of the caregivers would give their child ORS, while 8 (4.8%) would do nothing if their child got an episode of diarrhoea and 15 (9.1%) would give their children medication that they had previously received from the clinic if their child got sick due to diarrhoea, while 8(4.8%) would visit traditional healer if their children got sick from diarrhoea, and 9 (5.5%) of caregivers had no response.

Adequate knowledge is of paramount importance to practice as mothers who have used ORS before have been reported to have a 73% higher chances of utilizing recommended practices in comparison to those who have never heard or seen ORS (Njeri & Muriithi, 2013). Only 16, 4% of participants in this study used ORS as a home treatment if a child has diarrhoea. This findings shows that mothers and caregivers were quite knowledgeable about the administration of Oral Rehydration Solution each time a child is having diarrhoea episodes.

Table 12. Best fluid during diarrhoea

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Water	138	83.6	85.7	85.7
	Broth	8	4.8	5.0	90.7
	Fruit juice	2	1.2	1.2	91.9
	Rice	13	7.9	8.1	100.0
	Total	161	97.6	100.0	
Missing	System	4	2.4		
Total		165	100.0		

Out of 165 respondents who completed questionnaire, the majority 138 (83.6%) of caregivers opted water as a best fluid during diarrhoea. The researcher included rice as part of the fluids to examine if respondents knew how to distinguish fluids from solid foods. 13 (7.9%) of caregivers chose rice as a best fluid during diarrhoea, while 8 (4.8%) of caregivers opted broth as a best fluid during diarrhoea and lastly 2 (1.2%) of caregivers opted fruit juice as a best during diarrhoea. The findings of the results shows that caregivers have an understanding on which fluid is the best during diarrhoea. Food intake and fluid intake should be increased during the diarrhoea episode in order to maintain adequate nutritional status of the child.

However, the majority of caregivers in this study continued feeding the child, they either gave the normal or less amount of food. Similar findings had been reported in KDHS 2008-15 findings where only 5% of children were given more food than usual. Reduction in food consumption was attributed to loss of appetite and vomiting (Blum, et al., 2011). The results from the current findings showed that caregivers and mothers practises the proper way during diarrhoea episodes by giving water to the child, to prevent loss of fluid in the body. Therefore, giving the child water is the right thing to do as another way of rehydrating the child.

Table 13. Describing caregivers' knowledge of preventive measures to diarrhoea in children under 5 years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Promote breast feeding	55	33.3	35.9	35.9
	Eat clean/safe food	58	35.2	37.9	73.9
	hand washing	16	9.7	10.5	84.3
	Build more and use latrine	1	0.6	.7	85.0
	Complete course of medication	12	7.3	7.8	92.8
	Keep clean surrounding	11	6.7	7.2	100.0
	Total	153	92.7	100.0	
Missing	System	12	7.3		
Total		165	100.0		

Out of 165 respondents who completed the questionnaire, 35.2% of the caregivers know that eating clean and safe foods help in prevention of diarrhoea. While 0.6% know that the use of latrine would prevent their children from getting diarrhoea. More than half 68.5% had good level of knowledge on the prevention of diarrhoea in children under five years, while 24.3% had low knowledge on prevention of diarrhoea. The study findings showed that the majority of respondents reported poor hygiene as a cause of diarrhoea among children under five years, as most caregivers responded to be fetching water they use to prepare formula and food for the children in the river and only 37.2% agreed to boil the water before using it. These results are supported by the findings of the study done by Desta, et al. (2017) in Ethiopia who found out that around 213 (57.6%) of caregivers said that poor hygiene is the cause of diarrhoea and about 30.3% caregivers did not know any cause of diarrhoea.

Only 7% (12) agreed that they finish the course of medication when the baby has diarrhoea, while the rest would stop giving the baby medication once the diarrhoea stopped. The findings of this study contradicts the American Paediatric Guideline, which states that it is critical that children with diarrhoea finish their medication course to avoid treatment resistance if not taken medication as prescribed.

4.3 Summary

This chapter analysed, interpreted and discussed the collected data. The data gathered, aimed to answer the research objectives regarding the caregiver's knowledge on factors that contribute to diarrhea in children under five years. The next chapter 5 discussed below.

CHAPTER 5

LIMITATION, RECOMMENDATION AND CONCLUSION

5.1 Introduction

The aim of the study was to determine the caregivers' knowledge of factors that contribute to diarrhoeal disease among children at selected clinics in the Vhembe district. The discussion was discussed in line with the objectives of the study. The descriptive statistical analyses were used. An overall response rate of 100% (165) was achieved in the study. This means that the results are adequately represented out of the target population from which it was drawn. From the demographic data, the majority of respondents were mothers. The findings revealed that the majority 67(40.6%) of the respondents in this study were mothers between the ages of 18-25. 70(42.4%) had tertiary education and 13 (7.9%) had no formal education .This chapter presents the conclusion of the study on mother's knowledge on factors contributing to diarrhoea in children under-fives, it provides recommendations in four aspect based on findings namely nursing research, nursing practice, nursing administration and nursing education as well as limitation of the study.

5.2 Limitations of study

The respondents' level of education and socioeconomic status were not taken into account when the study was planned. The socioeconomic background and degree of education of caregivers influence their approaches to home management of diarrhoeal disease in children under the age of five years. The ability to acquire healthcare services may be influenced by socioeconomic level, but education may influence awareness of healthcare operations and the management of diarrhoeal illnesses.

Diarrhoeal disease has distinct indications and symptoms depending on the cause, which might lead to different home management options for the caregiver. Because of this constraint, the researcher was unable to obtain information on specific diarrhoeal illness home management. The researcher cannot access information related to the study at library due to covid-19 restrictions.

5.3 Recommendations

Based on the research findings, the following recommendations are made:

5.3.1 Recommendations relating to the study.

The study suggests that the Department of Health conduct public awareness campaigns to teach mothers how to manage diarrhoea. Charts and pamphlets with information on diarrhoea management should be provided in their native language so that they can understand it. Mothers and caregivers of children under the age of five should be encouraged to learn and seek more information about managing diarrhoea from all corners of society. Clinic staff can also collect mothers phone numbers shortly after giving birth and register or connect them in a system where messages are sent to them each week to educate them about diarrhoea in a language they understand, such as (mom connect).

Nurses and Primary Health Care workers should be trained in the application of IMCI techniques so that they can transmit relevant information and skills to the mother about early indications of dehydration, complications, and diarrhoea management, knowledge practices, and skills. The Department of Health must establish IMCI coordinators in each local clinic to supervise, follow up on IMCI training, conduct monthly support visits, and emphasize the use of IMCI tactics in all Primary Health Care institutions.

The Ministry of Health must ensure that the ORS (drip water) is not only available, but also accessible to mothers with children under the age of five. Mothers should be taught adequate hygiene procedures and should ensure that the water used in their homes is treated prior to use.

5.3.2 Nursing research

The knowledge and practice gaps surrounding mothers at home were revealed in this study. As a result, greater research into the management of diarrhoea in children under the age of five is needed for a better understanding of knowledge and behaviours of caregivers in various parts of the country Management of diarrhoea at home, as well as socio demographic aspects linked to knowledge. To further lower the risk of diarrhoeal infections in children under the age of five, more research and practice are needed, as well as to generalize the results to the entire South African community.

5.3.3 Nursing practice

Health professionals, such as nurses, can use the findings of this study to develop responsive health programs aimed at reducing diarrhoea-related morbidity and mortality in children under

the age of five. The data could be used to produce localized guidelines and encourage caregivers to adjust their home routines to prevent diarrhoea in their children.

5.3.4 Administration of Nursing Care:

The findings of this study demonstrate knowledge and practice disparities among mothers at home. The researcher propose that nursing administration be used to control diarrhoea in children under the age of five. Relevant guidelines that are appropriate for a local situation, as well as adequate and appropriate strategies to handle children under the age of five are more susceptible to diarrhoeal illnesses. Furthermore, the researcher recommends that health centres in the Vhembe Districts, in particular, organize and implement more health campaigns, health education, community conversations, and information dissemination in order to improve mothers' knowledge and practices regarding diarrhoea management at home, ultimately reduce the morbidity and mortality rates from diarrhoeal diseases among children less than 5 years of age.

There is also a need to train all health care providers especially nurses and community health workers on home management of diarrhoea in children under-fives so that they can later train and educate the community on diarrhoea home management, therefore reducing morbidity and mortality related to diarrhoea disease.

5.3.5 Nursing education:

The researcher recommends that nursing education institutions develop and implement responsive educational programs aimed at equipping graduates to deliver safe and quality care, preventive and curative care to mothers and children under five years of age and contribute to reduction of diarrhoea occurrence, mortality and morbidity rate.

5.4 Conclusion

According to the findings of this study, some mothers still have insufficient knowledge and bad habits when it comes to the home treatment of diarrhoea in children under the age of five. The mother's age and wealth status had a major impact on her level of knowledge. The age of the mother, who was most usually the child's caregiver was found to be a major factor in the degree of practice. There is a substantial linear link between mothers' knowledge and practice in the management of diarrhoea in children under the age of five. As a result, health education for mothers, in particular, should be used as an effective method to increase knowledge and behaviours for managing diarrhoea at home in children under the age of five.

5.5 Summary

In this last chapter, the research findings, limitation and recommendations were discussed. The findings revealed that the majority of the respondents in this study were mothers between the ages of 18-25.had tertiary education and others had no formal education.

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Appendix A. Approval from the Research Ethics Committee

ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Mr L Mulibana

STUDENT NO:
11602230

PROJECT TITLE: **Caregiver's knowledge about factors contributing to diarrhoeal diseases among children under five years at selected clinics in Vhembe district, Limpopo Province.**

ETHICAL CLEARENCE NO: SHS/20/PDC/57/1202

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Dr NS Raliphaswa	University of Venda	Supervisor
Dr M Maluleke	University of Venda	Co-Supervisor
Mr. L Mulibana	University of Venda	Investigator – Student

Type: Masters Research
Risk: Minimal risk to humans, animals or environment
Approval Period: February 2021 – February 2023

The Human and Clinical Trails Research Ethics Committee (HCTREC) hereby approves your project as indicated above.

General Conditions
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following.

- The project leader (principal investigator) must report in the prescribed format to the REC:
  - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project
  - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
  - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project,. the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
  - Request access to any information or data at any time during the course or after completion of the project,
  - To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.
  - withdraw or postpone approval if:
  - Any unethical principles or practices of the project are revealed or suspected.
  - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
  - The required annual report and reporting of adverse events was not done timely and accurately.
  - New institutional rules, national legislation or international conventions deem it necessary

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: November 2020

Name of the HCTREC Chairperson of the Committee: Dr NS Mashau

Signature:

UNIVERSITY OF VENDA
OFFICE OF THE DIRECTOR
RESEARCH AND INNOVATION
2021 -02- 18
Private Bag X5050
Thohoyandou 0950

University of Venda
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Appendix B: Approval letter from UHDC

UNIVERSITY OF VENDA

OFFICE OF THE DVC: RESEARCH AND POSTGRADUATE STUDIES

TO : MR/MS L. MULIBANA

SCHOOL OF HEALTH SCIENCES

FROM: PROF. N.N FEZA

DVC: RESEARCH AND POSTGRADUATE STUDIES

DATE : 19 JULY 2021

DECISIONS TAKEN BY UHDC OF 19th JUY 2021

Application for approval of Masters Proposal Report in Health Sciences: **L. Mulibana (11602230)**

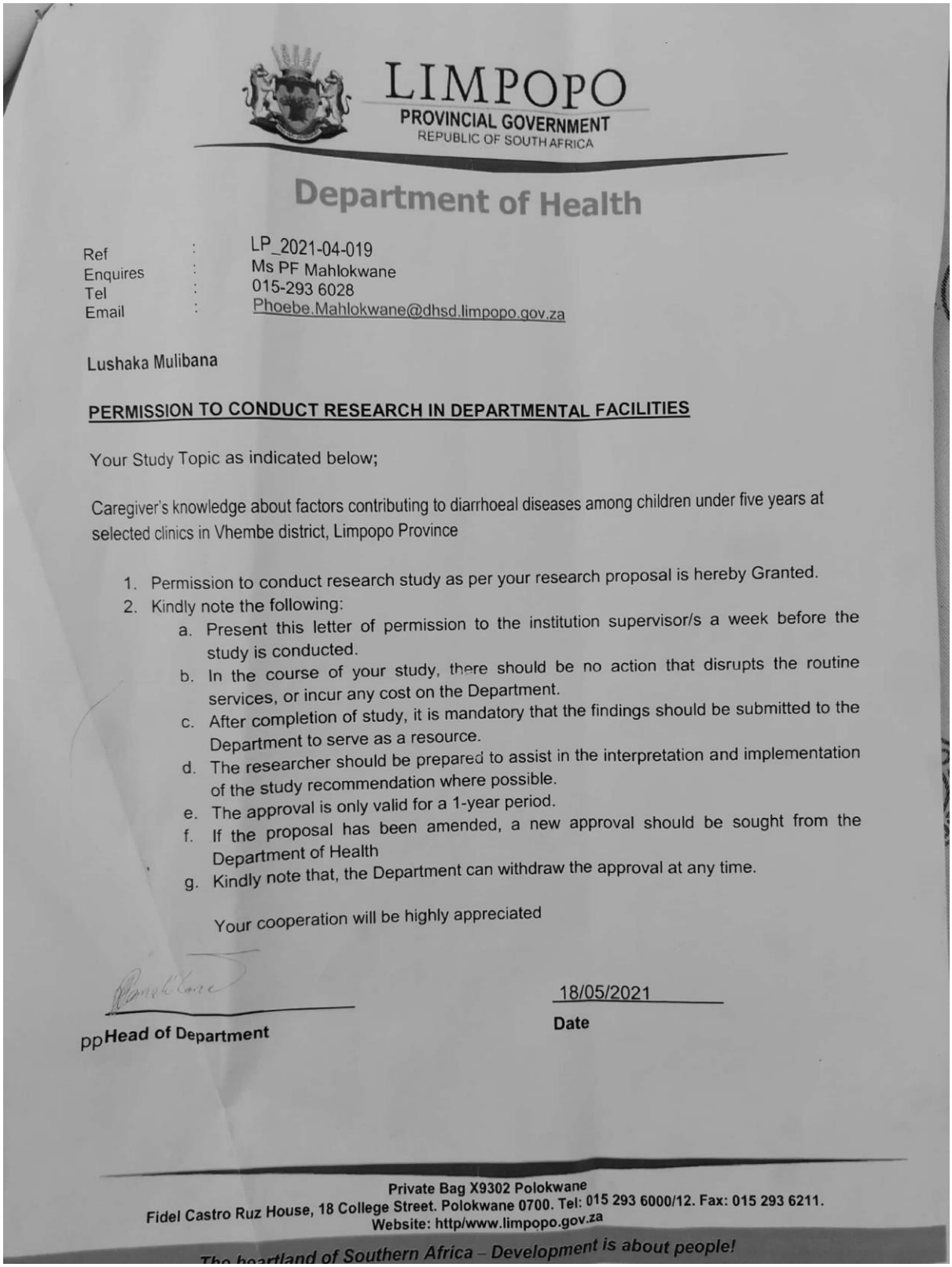
Topic: "Caregiver's knowledge about factors contributing to diarrhoeal diseases among children under five years at selected clinics in Vhembe district, Limpopo Province."

Supervisor	UNIVEN	Dr. N.S Raliphaswa
Co-supervisor	UNIVEN	Prof. M. Maluleke

UHDC approved Masters proposal

PROF. N.N FEZA
DVC: RESEARCH AND POSTGRADUATE STUDIES

Appendix C: Approval from the Province



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref : LP_2021-04-019
Enquires : Ms PF Mahlokwane
Tel : 015-293 6028
Email : Phoebe.Mahlokwane@dhsd.limpopo.gov.za

Lushaka Mulibana

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Caregiver's knowledge about factors contributing to diarrhoeal diseases among children under five years at selected clinics in Vhembe district, Limpopo Province

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
   a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
   b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
   c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
   d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   e. The approval is only valid for a 1-year period.
   f. If the proposal has been amended, a new approval should be sought from the Department of Health
   g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated

pp Head of Department

18/05/2021
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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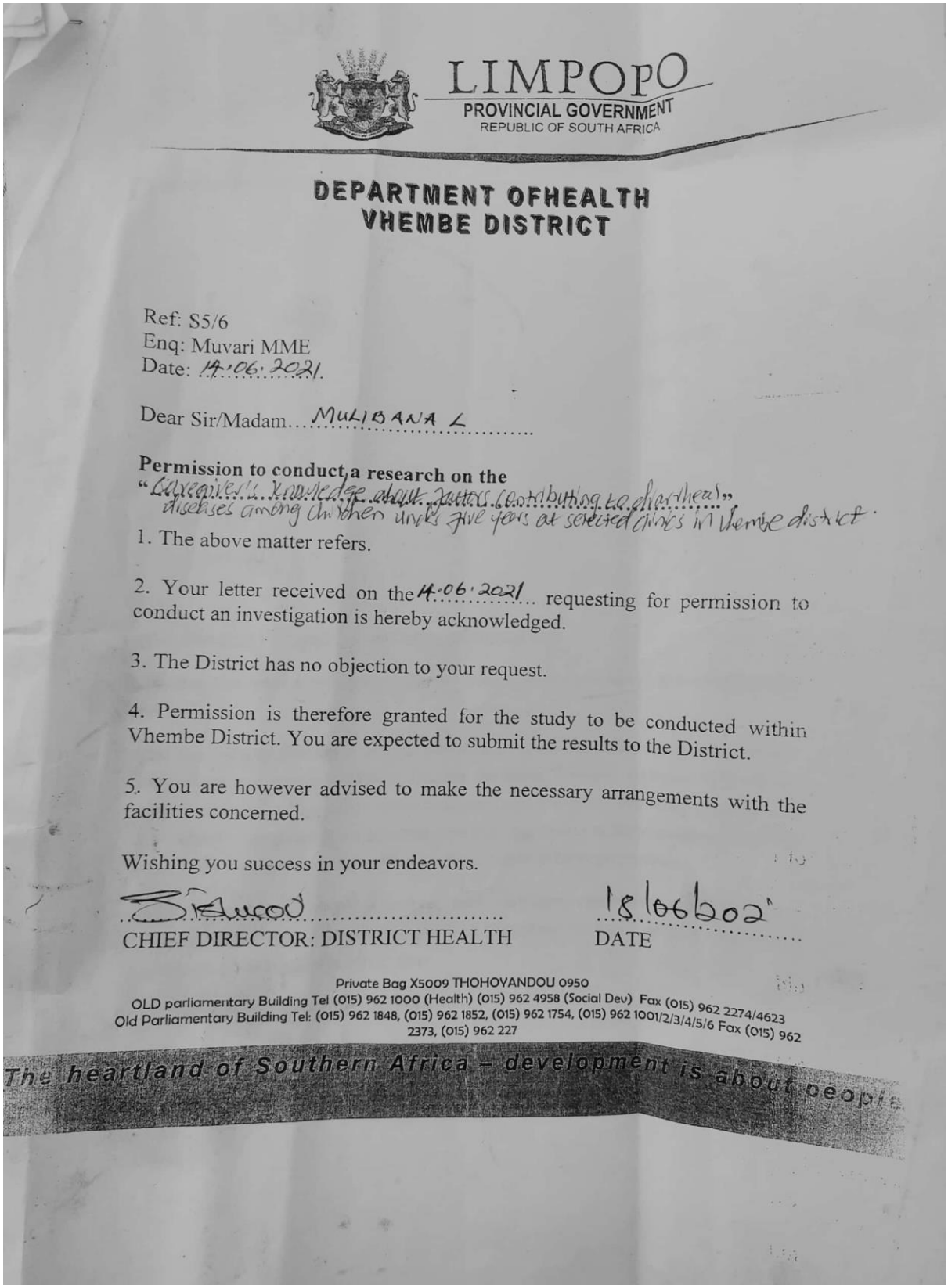
Appendix D: Approval from District



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OFHEALTH
VHEMBE DISTRICT

Ref: S5/6
Enq: Muvari MME
Date: 14/06/2021

Dear Sir/Madam... MULIBANA L

Permission to conduct a research on the
"Caregivers' knowledge about factors contributing to diarrheal diseases among children under five years at selected clinics in Vhembe district."

1. The above matter refers.

2. Your letter received on the 14/06/2021 requesting for permission to conduct an investigation is hereby acknowledged.

3. The District has no objection to your request.

4. Permission is therefore granted for the study to be conducted within Vhembe District. You are expected to submit the results to the District.

5. You are however advised to make the necessary arrangements with the facilities concerned.

Wishing you success in your endeavors.

CHIEF DIRECTOR: DISTRICT HEALTH — DATE 18/06/202

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

The heartland of Southern Africa – development is about people

Appendix: E Certificate of editing from the editor

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South Africa

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To whom it may concern.

I hereby confirm that I edited L. Mulibana's

Dissertation entitled,

Caregiver's knowledge on factors contributing to diarrhoeal diseases among children under five years at selected clinics in the Vhembe district, Limpopo Province

in February 2022.

I wish this student well in their endeavors.

Dr Catherine Hutchings

Appendix F: Letter of Information

Principal Investigator/s/ researcher : (*Mulibana. L (Bcur*)

Co-Investigator/s/supervisor/s : (*Dr Raliphaswa. N, S, (*Bcur) (Hons) (M. cur) (Phd)

Co-Investigator/s/supervisor/s : (Dr Maluleke. M (Bcur) (Hons) (M. cur) (Phd)

Brief Introduction and Purpose of the Study: Diarrhoea is defined as the passage of three or more loose or watery stools per 24hour or an increase in stool frequency or liquidity considered abnormal by the mother (Alebel, Tesema, Temesgen, Gebrie, Petrucka and Kibret, 2018). Childhood diarrhoea is one of the leading causes of death in children under 5 years, is a major threat to child health (Kotlo, Platts-Mills, Nasrin, Roose, Blackwelder and Levine, 2017). The purpose of this study was determine the caregiver knowledge on factors that contributing to diarrhoea among children under 5 years at selected public clinic, Vhembe district of Limpopo Province.

Outline of the Procedures : (the population of the study included caregivers residing Vhembe district. The sample size of 165 was calculated using a Slovin's formula. Systematic sampling was used to select the respondents in this study. Data was collected using self-administered questionnaire. Questionnaire was comprised of five sections. Respondents were given the questionnaires in the private rooms by the researcher who wait for them to complete. It takes about 15-20 minutes to complete the questionnaire.)

Risks or Discomforts to the Participant: (There are no foreseen risk and discomfort to respondents in the study. The respondents were completing questionnaires and there was no sensitive questions asked)

Benefits : (By participating in the study the respondents become aware of factors on contributing to diarrhoea disease among children under 5 years and its vaccine as well as its consequences on health and how to prevent it.)

Reason/s why the Participant May Be Withdrawn from the Study: (participation was voluntary and respondents were allowed to cancel to participate at any time if they wish to do so).

Remuneration : (Respondents were clearly understand that no any remuneration will be given, participation was voluntary.*)*

Costs of the Study : (*Respondents were not cover the cost of study)*

Confidentiality : (respondent's anonymity was guaranteed and respondent's name will not be mentioned anywhere in the research)

Research-related Injury : (Respondents in this study were not involved in any invasive procedure and data collection was collected by a researcher who was a man and therefore there was no research-related injury anticipated.)

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher (Mulibana.L) (0723641568), my supervisor (Dr Raliphaswa, NS) (015 962 8892) or the University Research Ethics Committee Secretariat on 015 962 9058. Complaints can be reported to the Director: Research and Innovation, Prof GE Ekosse on 015 962 8313 or Georges Ivo.Ekosse@univen.ac.za

CONSENT

Statement of Agreement to Participate in the Research Study:

I ……hereby confirm that I have been informed by the researcher, (***Mulibana L***), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number:,

- I have also received, read and understood the above written information (*Respondents Letter of Information*) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant Date Time Signature

…… …… …… ……

I (Mulibana.L) here with confirm that the above participant has been fully
Informed about the nature, conduct and risks of the above study.
Full Name of Researcher
…… Date…… Signature……
Full Name of Witness (If applicable)

…… Date …… Signature……..

Full Name of Legal Guardian (If applicable)

…… Date…… Signature……

Appendix: G Questionnaire

Instructions **code**

1. Answer all questions in this questionnaire.
2. Do not write your name.
3. Do not tear any page
4. Tick or fill all appropriate answer on the space provided

SECTION A: SOCIO-DEMOGRAPHIC PROFILE

1. Primary caregiver in this household

1. Mother ☐
2. Father ☐
3. Aunt ☐
4. Other Relative ☐

2. What is your age?

1.18-25 ☐
2.26-30 ☐
3.30-35 ☐
4.35 and above ☐

3. What is your religion?

1. Moslem ☐
2. Christian ☐
3.Traditional ☐
4. Other ☐

4. What levels of education level have you attained?

1. None ☐
2. Primary ☐
3. Secondary ☐
4. Tertiary ☐

5. Marital Status

1. Single ☐
2. Married ☐
3. Divorced ☐
4. Widow ☐

6. Currently what do you do for a living? (Occupation)

1. Housewife ☐
2. Business ☐
3. Student ☐
4. Employed ☐

5. Other ☐

7. What is your Next of Kin's Occupation?

1. None ☐ 2. Self-employed/ Business ☐

3. Employed ☐ 4. Other ☐

8. How many adults do you live with in the household on a regular basis? ☐

9. How many Children live in the household on a regular basis? ☐

10. Age of the child? ☐

11. How much money do you spend in a day?

1. R200 or less ☐ 2. More than R250 ☐

SECTION B: HOUSEHOLD QUESTIONNAIRES

PHYSICAL HOUSE-HOLD/ ENVIRONMENT CHARACTERISTICS

	Yes	No
1.Presence of flies around or near the house-hold		
2. Presence of rubbish around or near the house-hold		
3.Presence of faeces around or near the house-hold		

SECTION C: CAREGIVER'S KNOWLEDGE

1. What do you understand by the term diarrhoea or how can you recognize diarrhoea?

1. Passing of watery stool one time in a day ☐
2. Passing of watery stool two times in a day ☐
3. Passing of watery stool three times in a day ☐
4. Passing of watery stool four in a day ☐
5. Other ☐

2. What are the causes of diarrhoea in children from the list below? (Tick any of your answers below)

Insects/Mosquitoes	
Changes in weather	
Dirty/Unsafe drinking water	
Eating bad food	
Bad spirits	
Poor personal hygiene	
Bad smells	
Malaria	
Other	

3. Has your child suffered from diarrhoea in the past 2 weeks?

1. Yes ☐ 2. No ☐

4. What form or type of diarrhoea has you child suffered from?

1. With Blood ☐ 3. With no Blood ☐

2. Very watery ☐ 4. Other ☐

5. The last time when your child had diarrhoea, what did you do at home to try and help your child recover?

1. Nothing ☐ 4. Give less fluid ☐

2. Gave home mixture of oral rehydration salts ☐ 5 Give more food ☐

3. Gave the child more fluids ☐ 6. Give less food ☐

7. Other ☐

6. How do you get information about diarrhoea?

1. Television ☐ 3. From the Hospital ☐

2. Radio ☐ 4. Other ☐

7. What do you do when your children have diarrhoea?

1. Nothing, no treatment ☐ 4. Give ORS ☐

2. Take to a clinic/doctor ☐ 5.Visit a traditional healer ☐

3. Give medicine at home ☐ 6.Other ☐

8. In your opinion, what should be done to prevent diarrhoea incidences and to improve child health?

1. Promote breastfeeding ☐ 4.Build more and use latrine ☐

2. Eat clean/ safe foods ☐ 5. Complete course of immunization ☐

3. Hand washing ☐ 6. Keep clean surrounding ☐

SECTION D: Feeding / Diet: Tick all appropriate answer

1. Is the child still breastfeed

1. Yes ☐ 2. No ☐

1.1 If yes, which method are you using to breastfeed your child?

1. Exclusive breast feeding? 2. Mixed feeding ☐

1.2. How often do you breastfeed your baby?

1.1-2 times per day ☐ 2. 3-4 times per day ☐

3. .4-5 times per day ☐ 5. 5+ ☐

2. If no, what are you feeding your child with?

1. Formula feeding ☐ 2. Tea or water ☐

3. None

Where is the water to make formula milk coming from?

1. Spring ☐ 2. Borehole ☐

3. River ☐ 3. Tap water ☐

5. How do you prepare formula milk feeding?

1. Washing hands ☐ 2. Clean and sterilize bottle ☐

3. Boiled water ☐ 4.None ☐

6. Can you kindly explain in brief the foods you give to your baby?

.....

.....

.....

7. Do you give your baby anything to drink? If yes, explain when and how do you give him/her

.....

.....

.....

SECTION E: Management of diarrhoea

1. Which of these food is a good choice when child have diarrhoea?

1. Banana ☐ 2. Rice ☐

3. Mangoes ☐ 4. Apple ☐

5 Jungle oats ☐ 6. Sweets ☐

2. Which of these food may increase diarrhoea in child

1. Fatty food ☐ 2. Milk ☐

3. Butter ☐ 4. Ice cream & cheese ☐

5. ORS ☐ 6. All of the above ☐

3. Which of these fluids is the best to drink when child have diarrhoea

1. Water ☐ 2. Broth ☐

3. Fruits juice ☐ 4. Rice ☐

4. Which of the following is the best treatment of diarrhoea?

1. ORS ☐ 2. Zinc syrup ☐

3. Azithromycin ☐ 4. Panado ☐