THE DETERMINANTS OF UNDER- FIVE MORTALITY IN A SELECTED VILLAGE IN VHEMBE DISTRICT, SOUTH AFRICA.

By

GRACE CHIFAMBA

A mini- dissertation submitted in partial fulfilment of the requirement for the degree:

Master of Public Health (MPH)

Department of Public Health

School of Health Sciences

UNIVERSITY OF VENDA

Supervisor : Dr M Maluleke

Co-supervisor : Prof A.K Tugli

2020

Declaration

I, GRACE CHIFAMBA, hereby declare that ‘‘**The determinants of under-five mortality in a selected village in Vhembe District, South Africa**” for the degree of Master of Public Health at the University of Venda, School of Health Sciences is my original work and has not previously been submitted for a degree at this or any other institution, and that it is my own work in design and execution. All reference materials contained therein have been duly acknowledged.

Signature: Chifamba G **Date: 02.08.2020**

Dedication

I dedicate this thesis to the glory of God, “so then it is not of him that willeth, nor of him that runneth, but of God that sheweth mercy”. To my supervisor’s Dr M Maluleke and Prof A K Tugli, thank you so much for your patience, guidance and support. Dr Maluleke you encouraged me to persevere. God bless you.

Acknowledgements

First and for most I would like to acknowledge the Almighty GOD, who by His grace and mercies made it possible for me to reach where I am today.

I would like to thank the following people who contributed greatly to my study.

- My supervisor, Prof AK Tugli, Thank you so much for your guidance and support. God bless you.
- My co-supervisor Dr M Maluleke, Thank you so much for your patience, guidance and support. Dr Maluleke you encouraged me to persevere. God bless you.
- To my English editor, thank you for proof-reading my work.
- To my husband Kelvin, thank you for understanding, giving me space and time to study.
- To my spiritual father, Pastor Festus Mulwanda, you are a great daddy. Thank you so much for the emotional and spiritual support.
- To Jenny Chota and Kupa Mukurumbira you have a special place in my heart. Thanks for the emotional support and for your prayers.
- To my grandmothers Mbuya Gomwe you are an inspiration-a woman of integrity. Gogo Muriro, thanks for the emotional support, Laughter is the best medicine.
- To my family and my in laws, thank you for believing in me and for your support.
- To my colleagues Takani Mudau, Tendani Nemakhavhane, Nesta Mukona, Mrs A Muphanama, Mrs A Lalumbe, Mrs A Phosiwa and Mr E.M Munwana, thank you very much for your support.

Abstract

Background: Despite modest improvements in child health outcomes during the 20th century, infant and child mortality rates remain unacceptably high in South Africa. South Africa, like many other countries in sub-Saharan Africa, is challenged by high levels of under -five child mortality.

Aim: The purpose of this study was to explore the determinants of under-five mortality in a selected village in Vhembe District, South Africa.

Methodology: The study was conducted in Mhinga Village in Vhembe District, Limpopo province South Africa. A qualitative approach using a descriptive design was used for the study. A sample of 7 mothers who lost children under 5 years of age through death were selected from the target population by means of snowball sampling. Data was collected through a semi-structured interview. The data collected was analysed using the thematic analytical approach.

Results: Four main themes emerged during data analysis namely, diseases and infections as causes of U5M in Mhinga, Maternal and perinatal health as determinants associated with U5M in Mhinga, Health care factors as determinants associated with U5M in Mhinga and cultural factors as determinants contributing to U5M in Mhinga,

Conclusion and recommendation: The study recommends that a study be conducted on the factors that affect the utilisation of health and ANC services and strategies to promote the use of health and ANC services in Mhinga. The researcher further recommends that a study be conducted on strategies to reduce U5M in Mhinga.

Key words: Under-five mortality, Determinants, Mother, Demographic, Socio-economic, Biological.

List of Acronyms

AIDS : Acquired Immune Deficiency Syndrome.

ART : Antiretroviral Treatment

CARMMA : Campaign for Accelerated Reduction in Maternal and Child Mortality in Africa.

CoMMiC : Committee on Morbidity and Mortality in Children under-5 Years.

HIV : Human Immunodeficiency Virus

ICDDRB : International Centre for Diarrhoea Disease Research, Bangladesh.

ICSU : International Council for Science

IMCI : Integrated Management of Child Illnesses.

ISSC : International Social Science Council

MDG : Millennium Development Goal.

MCH : Mother Child Health

MNCWH&N : Maternal, Neonatal, Child and Women's Health and Nutrition Strategic Plan.

NaPeMMCo : National Perinatal and Neonatal Morbidity and Mortality Committee.

NDHS : Nigeria Demographic and Healthy Survey

NGO : Non-governmental organisation

PHC : Primary Health Care

PMTCT : Prevention of Mother to Child Transmission of HIV.

PPIP : Perinatal Problem Identification Programme.

SASSA : South African Social Security Agency

SDG : Sustainable Development Goals

STATS, SA : Statistics South Africa

U5M : Under-five Mortality

U5M : Under-five Mortality Rate

UN : United Nations

UNDP : United Nations Development Programme.

UNICEF : United Nations Children's Emergency Fund

WHO : World Health Organisation.

WHS : World Health Statistics

Table of Contents

List of Tables

List of figures

CHAPTER 1

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

Under-five mortality (U5M) is significant public health issue especially in Sub Saharan Africa. United Nations International Children's Emergency Fund (UNICEF) defines U5M as "the probability of dying between birth and exactly five years of age". U5M is high in developing countries as compared to developed countries (UNICEF, 2018). United Nations (UN) described the 1st day, week and month of a child's life as the most life threatening (United Nations, 2015). Literature shows that in order to reduce U5M knowledge about the determinants of child mortality in rural settings is needed to address the problem. Therefore, the purpose of the study was to explore the determinants of U5M in Mhinga Village, Vhembe District, South Africa.

1.2 Background of the study

Under-five mortality (U5M) is a public health concern which affects all the countries. Globally 16000 children die every single day with 11 deaths occurring each minute (World Health Organisation, 2017). Worldwide, U5M has decreased by 59%, from an estimated rate of 93 deaths per 1000 live births in 1990 to 39 deaths per 1000 live births in 2018 (WHO, 2019). About 5.3 million children under age five died in 2018 (UNICEF, 2018). Some countries made remarkable progress for example, China reduced under-5 mortality from 28.4% to 1.3% in 2013 (Li, Zhang, Fang, Liu, Liu, Li, Liang, and Fu, 2017). In Sweden the U5M is 2.5 per 1,000 live births and in Canada it is 5.22 per 1,000 live births (Tambe, Sammons, and Choonara, 2015; Bryce, Amouzou, Victora, Jones, Silva, Hill, and Black, 2016).

Though the global under five mortality rate (U5MR) dropped the highest rates are still seen in sub-Saharan Africa as compared to high income countries (Vogel,

Chawanpaiboon, Moller, Watananirun, Bonet, and Lumbiganon, 2018). In Europe region child mortality rate is 11 deaths per 1000 live births in contrast to 100 deaths per 1000 live births African region (WHO, 2015). In Sub-Saharan Africa 1 out of 12 children dies before their 5th birthday (WHO, 2018). Many countries still have very high U5M particularly in Ethopia, Zimbabwe ,Uganda ,Mali, Nigeria and Comoros with an under-five mortality rate above 100 deaths per 1000 live births (WHO, 2018). Consequently, children in these countries are 10 times more likely to die before the age of 5 years than children in developed countries (UNICEF, 2018). Over 80% of under-five deaths occur in low-income countries in sub-Saharan Africa and Southern Asia (WHO, 2015). In sub-Saharan Africa, 1 in 12 children dies before 6 months, which is 12 times higher than the average figure of 1 in 147 children in developed countries (UNICEF, 2018). Globally, the leading causes of U5M are pre-term birth complications, pneumonia, birth asphyxia, diarrhea, malaria, congenital anomalies and neonatal infections diarrhea, pneumonia, pregnancy and child birth complications, sepsis, respiratory infections, malnutrition, TB and HIV/AIDS (WHO, 2015; Nannan, Dorrington, Laubscher, Zinyakatira, Prinsloo, Darikwa, Matzopoulos, and Bradshaw, 2012).

South Africa is among the sub-Saharan countries that are still facing high U5MR. According to Statistics South Africa (2015), South Africa was unable to achieve the MDG 4 target of reducing the U5MR by two-thirds between 1990 and 2015. Current levels of U5M in South Africa are 34,3 deaths per 1 000 births, instead of 20 deaths per 1 000 births (StatsSA, 2015). In South Africa (SA), statistics have indicated an annual child mortality reduction rate of 1.6 per cent, from 60 per 1,000 live births in 1990 to 41 per 1,000 in 2015 (Stats SA, 2015). According to recent estimates U5M was estimated at 37 - 40 deaths per 1 000 lives birth (Bamford, McKerrow, Barron, and Aung, 2018). Despite the decline in childhood mortality, rural areas in South Africa continue to experience high childhood mortality rates (Bamford et al., 2018). Diarrhoea, pneumonia and HIV infection remain the main causes of death outside of the new-born period. The proportion of deaths owing to non-natural causes, congenital disorders and non-communicable diseases has increased (Bamford et al., 2018).

In response to the burden of childhood mortality in sub-Saharan Africa countries, United Nations and World Health Organization (WHO) in a bid to reduce childhood mortality by two-third by the year 2015 set U5M as one of its Millennium Development Goals (MDGs) (United Nations, 2009). MDGs were set out in September 2000 with a deadline of 2015. The MDG 4 target was to reduce under- five mortality rate by two-thirds between 1990 and 2015 and different nations worldwide made attempts to reduce child deaths and achieve MDG 4; however, the progress made was not enough to reach MDG 4 target globally (United Nations, 2015a). As a result, child deaths are still high in many regions, particularly in Caucasus and Central Asia, Oceania, Southern Asia and sub-Saharan Africa (United Nations, 2015a). New Sustainable Development Goals (SDGs) came into effect on 1 January 2016 to offer key improvements on the MDGs whose term ended in 2015 (United Nations, 2015). The SDG 3,2 target is to end preventable deaths of newborns and children under five years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1, 000 live births and under-five mortality at least as low as 25 per 1, 000 live births by 2030 (United Nations, 2015).

The goal is for all countries aiming reduce under-five mortality to at least as low as 25 per 1000 live births. About 120 Member States already met the SDG target on under-five mortality, and 21 countries are expected to meet the target by 2030, if current trends continue (WHO, 2016). According to UN (2015), in order to achieve the SDG target of an U5M of 25 or fewer deaths per 1, 000 live births by 2030, a total of 47 countries are supposed to increase their pace of progress. At least 30 of these countries must double their current rate of reduction and 11 must triple the current rate of reduction (WHO, 2016).

South Africa aims to reduce the U5M rate to 25 deaths per 1 000 live births or below, and to end preventable deaths among children under age 5 by 2030 (Tlou, Sartorius, and Tanser, 2018). Therefore, urgent efforts are needed to identify the factors that

increase the probability of U5M especially in rural areas (Berelie, Yismaw, Tesfa, and Alene, 2019). Child health is determined by many factors. Mosley and Chen (1984) observed that child mortality is determined by a combination of socioeconomic, biological, environmental, and behavioural factors. While U5M is mainly caused by a specific condition, disease or injury, there are cultural, environmental, social and behavioural factors which lead to disease, ill health and death in early childhood (Bamford et al., 2018). A study conducted in Nigeria by Samuel (2016) classified the determinants of U5M as socio economic, environmental, biological and health determinants. Furthermore Harabo (2017) classified determinants into three categories child's personal, biological, behavioural characteristics of the child's mother and socio-economic household and community characteristics. The mother`s level of education, type of residence ,access to or use of health facilities, age of the mother at time of child birth, sex of the child, birth order, birth interval, breast feeding and cultural beliefs and practices are also some of the determinants of U5M (Liang, Macinko, Yue, and Meng, 2019; Berelie et al., 2019; Tlou et al., 2018). Literature shows that knowledge about the determinants of child mortality in rural settings is insufficient to address the problem (Tlou et al., 2018). Therefore, the purpose of the study was to explore the determinants of under-five mortality in Mhinga Village, Vhembe District, South Africa.

1.3 Rationale

Many studies which have been conducted in South Africa focused on trying to measure the extent or prevalence of U5M or child mortality in general only using retrospective demographic survey ready data (Tlou et al., 2018). In addition, these studies have largely focused on personal characteristics of individuals; thereby ignoring community and other contextual factors instead they assumed independence between characteristics at various levels individual, household and community levels using retrospective data (Adedini, 2014). Therefore, this study sought to understand these circumstantial factors using an exploratory qualitative method to fill that gap.

1.4 Problem Statement

According to the National Department of Health statistics under five mortality rates are on the decline in Limpopo province. Infant mortality rate (IMR) has declined from an estimated 41.1 infant deaths per 1 000 live births in 2010 to 32.8 infant deaths per 1 000 live births in 2017 (Statistics South Africa, 2017), (See table 1.1). Similarly, U5M declined from 58.4 child deaths per 1 000 live births to 42.4 child deaths per 1 000 live births between 2010 and 2017. However, this is not enough to help the country reach sustainable development goal of reducing U5M below 25 per 1000. This study was motivated by the alarming rate in U5M in the province where Mhinga Village is located, meaning U5M in Mhinga village is also contributing to the noted high U5M in the province.

Professional social workers from a non-governmental organization called Families South Africa Vhembe have been involved in offering professional debriefing and bereavement counselling for families and clients in Mhinga Village, such as those that had lost children under-five years of age through death. They offered debriefing for seven U5M cases in 2016 and five cases in 2015. Five of these cases were from Mhinga village. This triggered the researcher into checking the statistics for U5M in this area. The Department of Cooperative Governance and Traditional Affairs at Mhinga Tribal Authority recorded eleven cases of U5M that occurred at home between 2014 and 2016. Six of these cases were from Mhinga village. Children represent the future and ensuring their health, growth and development should be a prime concern for all societies. The death of children under-five years of age can be due to several causes and factors. This study therefore explored the determinants of U5M in Mhinga village, Vhembe District, South Africa.

Table 2.1: Prevalence of Infant and under five mortality in Vhembe District Limpopo

Year	Infant mortality	Under five mortality
2010	41.1	58.4
2011	39.9	54.4
2012	38.8	51.5
2013	37.4	49.1
2014	36.0	47.1
2015	34.0	44.7
2016	33.5	43.6
2017	32.8	42.4

1.5 Purpose of the study

The purpose of the study was to explore the determinants of under-five mortality rate in Mhinga Village, Vhembe District, South Africa.

1.6 Objectives of the study

The following were the specific objectives of this study:

To identify the determinants of U5M in Mhinga

To describe the determinants of U5M in Mhinga.

To identify the causes of U5M in Mhinga

1.7 Research Questions

The followings were the research questions:

What are the determinants of U5M in Mhinga?

What are the causes of U5M in Mhinga?

1.8 Significance of the study

This study is significant as it will be a measure used to track, how far South Africa as a country has come in combating infant and child mortality. Understanding determinants of under-five child mortality in rural areas is important for a country in order to evaluate the effectiveness of intervention programmes as well as for policy planning. Efforts to reduce child mortality can only be given priority and a sense of urgency if the extent of the problem is well known together with issues that are hampering efforts to reduce child mortality are clearly defined. The results of this study may help the Department of Health, Department of Social Development, South African Social Security Agency, Department of Education, and Non-Governmental Organisations in Mhinga in coming up with programmes that promote child survival. This will ensure that the government accelerate pace of progress to achieve the SDG target on child survival. The results of the study may also help in prioritizing the factors for effective health interventions in the face of competing scarce resources. The study may also contribute to literature on under five child mortality in South Africa and beyond.

1.9 Definition of Concepts

Under-five mortality- According to WHO (2015), U5M is the risk of a child dying before completing five years of age is still highest in the WHO African Region (74 per 1000 live births), around 8 times higher than that in the WHO European Region (9 per 1000 live births). In this study under-five mortality is dying between birth and fifth birthday.

Determinants- factors which decisively affect the nature or outcome of something (Webster, 2010). For the purpose of this study determinants are the factors or circumstances that lead to U5M.

Mother - A mother is a woman in relation to her child or children. A mother is a woman who has given birth to a child or children (Soanes & Stevenson, 2006). A mother in this study refers to women who have given birth to the deceased child.

Demographic – demographic factors are characteristics of a population expressed statistically such as age, sex, religion (WHO, 2015). In this study demographic factors include age, gender and marital status.

Socio-economic – refers to a measure of class standing typically indicated by income, occupational prestige and educational attainment (Webster, 2010). In this study socio - economic factors refer to social status, educational and financial aspects of the mother of the deceased child.

Biological –define biological as anything that affects the function and behaviour of a living organism. Internally this factor can be physical, physiological, neurological or genetic. Biological factors are primary determinants of human behavior (Webster, 2010). In this study biological factors are physical circumstances around the birth of the child, such as birth weight and birth size.

1.10 Structure of the Mini-Dissertation

The dissertation consists of five chapters and they are structured as follows:

Chapter 1: Introduction and Background of the Study

This chapter focuses on the background of the study on determinants of U5M. The background of the study helped to put the study into perspective. The chapter discusses the problem statement, rationale, objectives and research questions of the study. The

purpose of the study was provided to help the researcher remain focused on what the study should entail. The chapter ends by highlighting the structure of the study.

Chapter 2: Literature Review

This chapter presents literature related to the topic which helped the investigator familiarise herself with the determinants of U5M.

Chapter 3: Research Design and Methodology

This chapter focuses on the general picture of how the study was conducted. This involves discussions on the research design, the study setting, study population and sampling, data collection instrument, data collection and data analysis.

Chapter 4: Results and discussion of findings

This chapter presents the data that were obtained from participants. Thematic analytical approach was used to analyse the data. The emergent themes, sub-themes and categories are discussed in this chapter.

Chapter 5: Summary, Limitations, Conclusions and Recommendations

This chapter presents the summary, conclusion, limitation of the study and recommendations of the study. The conclusion is based on the research findings. Recommendations to identified stakeholders are also made. Lastly, suggestions for further investigators are given.

1.11. Summary of the chapter

This chapter has introduced the title of this study to the reader. It also outlined the background, problem statement, objectives, and significance of the study, research questions and definition of concepts. The chapter ends by outlining the structure of this study. The next chapter highlights the literature review.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Chapter 1 of this study outlined the introduction to the study. Literature review is described as identifying; weighing and combining existing body of literature, finalized and recorded work by different scholars. This chapter presents data- based literature on causes of U5M and determinants of U5M. It also discusses the legislation and services to reduce U5M. Literature review assisted in the study in clarifying the purpose and objectives of the study.

2.2 Trends in Under-Five Mortality

Globally 16000 children die every single day with 11 deaths occurring each minute (WHO, 2017). Worldwide, under-five mortality rate has decreased by 59%, from an estimated rate of 93 deaths per 1000 live births in 1990 to 39 deaths per 1000 live births in 2018 (WHO, 2019). About 5.3 million children under age five died in 2018 (UNICEF, 2018). Some countries made remarkable progress for example, China reduced under-5 mortality from 28.4% to 1.3% in 2013 (Li et al, 2017). In Sweden the under–five mortality is 2.5 per 1,000 live births and in Canada it is 5.22 per 1,000 live births (Tambe et al., 2015; Bryce et al., 2016).

Though the global U5M dropped the highest rates are still seen in sub-Saharan Africa as compared to high income countries (Vogel et al., 2018). In Europe region child mortality rate is 11 deaths per 1000 live births in contrast to 100 deaths per 1000 live births in WHO African region making it seven times higher than Europe (WHO, 2015). Consequently, children in these countries are 10 times more likely to die before the age of 5 years than children in developed countries (UNICEF, 2018). Over 80% of under-five deaths occur in low-income countries in sub-Saharan Africa and Southern Asia (WHO, 2018). In sub-Saharan Africa, 1 in 12 children dies before 6 months, which is 12 times higher than the

average figure of 1 in 147 children in developed countries (UNICEF, 2018). Diarrhoea, pneumonia and HIV infection remain the most causes of death outside of the new-born period. The proportion of deaths owing to non-natural causes, congenital disorders and non-communicable diseases has increased (Bamford et al., 2018).

2.3 Diseases and Infections as a cause of U5M.

The major causes of under-five mortalities remain relatively the same globally though their impact varies across the different geographical regions of the world (United Nations, 2015). Six conditions account for about 70% of all child deaths: acute lower respiratory infections, mostly pneumonia (19%), diarrhoea (18%), malaria (8%), measles, (4%), HIV/AIDS (3%), and neonatal conditions, mainly pre-term birth, birth asphyxia, and infections (37%). The relative contribution of HIV/AIDS to the total mortality of children under-five, especially in sub-Saharan Africa, has also been increasing steadily (UN, 2015). Report on national burden of disease in South Africa showed that the cause of death for children under 5 is HIV/AIDS (28%), diarrhea (18%), pneumonia (11%), pre term birth (10%), Other conditions (13%), injuries (4%), birth asphyxia (5%), severe infections (3%), congenital (2%), tuberculosis (2%) and other neonatal (4%) (Bradshaw, Wky, Somdyala and Cerf, 2016). These are explored in detail below:

2.3.1 Diarrhoea and Pneumonia

The Committee on Morbidity and Mortality in Children Under 5 years (CoMMiC) report states that the epidemiology of diarrhoea and pneumonia overlap and are partly due to shared risk factors such as under-nutrition, suboptimal breast feeding, zinc deficiency and environmental conditions (CoMMiC, 2014). WHO (2017) estimated that nearly two million under five deaths are because of diarrhoea and pneumonia globally. The Lancet reported that diarrhoea and pneumonia remain the leading infectious causes of death in children younger than 5 years, and together caused an estimated 2 million deaths globally in 2011. The global burden of incidence and severe disease for both diarrhoea and pneumonia is highest in Southeast Asia and Africa. 72% of deaths associated with diarrhoea and 81%

of those associated with pneumonia happen in the first 2 years of life (Walker, Rudan, Liu, Nair, Theodoratou, Bhutta, O'Brien, Campbell, and Black, 2013).

In South Africa, diarrhoea and pneumonia are the leading causes of under-five deaths beyond the neonatal period (WHO,2017). The Committee on Morbidity and Mortality in Children Under 5 years (COMMIC) also report that diarrhoea and pneumonia were leading causes of U5M in South Africa from 2010 to 2013. However, the same report noted that diarrhoeal and pneumonia deaths in South Africa were decreasing due to the roll-out of rotavirus and pneumococcal conjugate vaccines (CoMMiC, 2014). Diarrhoea and pneumonia deaths were reported to be closely associated with HIV infection and children in rural areas to be at more risk of diarrhoea and pneumonia. In Limpopo province, diarrhoea was responsible for 9,5%, 8.5%, 8.9%, 7,7% and 5.7% of U5M in 2009,2010,2011,2012 and 2013 respectively while Pneumonia was responsible for 10.4%, 8.0%, 5.7%, 5.2% and 4.7% of U5M in 2009,2010,2011,2012 and 2013 respectively (CoMMiC, 2014).

2.3.2 HIV/AIDS and Tuberculosis.

HIV/AIDS-related diseases are a major cause of death in young children, followed by pneumonia and acute diarrhoea (UNAIDS ,2017). In 2016, 24% of pregnant women living with HIV did not have access to ARVs to prevent transmission to their infants. In the same year, around 160,000 children became infected with HIV; this equates to 438 children a day. Globally, 120,000 children died due to AIDS-related illnesses in 2016. This equates to 328 deaths every day (UNAIDS ,2017). According to, UNICEF (2016), children aged 0–4 years living with HIV are more likely to die than any people living with HIV of any other age, this is despite a 62% reduction in AIDS-related deaths among this age group globally, since 2000.

Human Immune Deficiency Virus infection in South African children has proven to be the single greatest underlying driver of childhood mortality (and morbidity) outside the newborn period and some 39% of these deaths are HIV associated. Tuberculosis has persistently been a leading cause of death in children and co-infection with HIV has made the diagnosis and treatment of both infections far more challenging. In South Africa TB was 5th leading cause of U5M in 2007 and 4th leading cause of U5M in 2012 (CoMMiC, 2014). In Limpopo province HIV/AIDS contributed to 48.2%, 40.8%, 31.7% and 41.2% of under five deaths which occurred in South Africa in 2010, 2011, 2012 and 2013 respectively. Vhembe District had the second highest number of child deaths due to HIV/AIDS which was 40.7% (CoMMiC, 2014).

2.3.3 Malaria

According to UN (2018), in 2016 malaria contributed to 5% of under- five deaths globally. World malaria report of 2015 noted a reduction in malaria mortality among under-fives, that malaria accounted for 5% of U5M globally in 2015, 10% of the deaths were from Sub-Saharan Africa where Malaria is no longer the leading cause of U5M but now 4th highest cause of U5M (WHO, 2015). The same year 2015 World Health Statistics (WHS) recorded that 7% of U5M globally was due to malaria (WHS, 2015).

In 2017, there were 219 million malaria cases that led to 435,000 deaths. Of these 61 per cent (266,000) were children under 5 years of age. This translates into a daily toll of nearly 730 children under age 5. Every two minutes, a child under five dies of malaria. Most of these deaths occurred in Sub-Saharan Africa. Since 2010, mortality rates among children under 5 have fallen by 34 per cent (UNICEF, 2019). In Malawi, the burden of malaria in children under the age of five was estimated at 24% in 2017 (WHO, 2018).

Malaria is estimated at 34% among children whose mothers have no formal education and causes 30% of outpatient visitation in children younger than 5 years old (WHO, 2018). U5M due to malaria is also a problem in South Africa. South Africa has 3 malaria-endemic

provinces which are Limpopo, Mpumalanga and Kwazulu-Natal. In 2010 South Africa had 451 cases of under-fives with malaria of these cases only 1 under-five died. In Mpumalanga and Kwazulu-Natal there were 233 and 22 cases of under-fives with malaria and only 1 under-five died in each province. Limpopo province had 257 under-five malaria cases and none of these children died in 2010. Vhembe district had 173 cases of under-fives with malaria and none died (Moonasar, Nuthulaganti, Kruger, Mabuza, Rasiswi, Benson, and Maharaj, 2012).

2.4 Determinants of Infant and Child Mortality

2.5 Socio-economic determinants of Under- Five Mortality

Socio-economic – refers to a measure of class standing typically indicated by income, occupational prestige and educational attainment (Webster, 2010). In this study socio - economic factors refer to social status, educational and financial aspects of the mother of the deceased child. Maternal level of education, family income, employment and place of residence are some of socio-economic determinants of U5M.

2.5.1 Maternal level of education

Mother's level of education is considered a determinant of U5M. For safe feeding practices and protection from childhood infections, an infant depends on the quality of care from its mother at home and mother child health services. This care begins with proper antenatal and birth care to ensure the delivery of a strong and healthy infant. The quality of child care provided by the mother is strongly related to her education level. This was established in the Nigeria Demographic and Health Survey Report (NPC) in 2013, that children born to mothers who had no education reported highest under-five mortality rates (180 deaths per 1,000 live births), compared to their counterparts who had more than secondary education and who reported 62 deaths per 1,000 live births, (NPC,2013). This is because, educated mothers are more likely than non-literate mothers to ensure a

healthy environment, nutritious food, and have better knowledge about reproductive health at conception and health care facilities for their children

There is also strong evidence on the inverse relationship between the mother's education and the survival of her child. For instance, Turkey Demographic Health Survey showed that a mother's high education level can help to make better child health, fertility and health seeking behavior (Grepin and Bharadwaj, 2015). Law for Compulsory primary education of mother was introduced in Turkey in order to improve child health. A cohort study on the effect of the Compulsory School Law was evaluated. Results from the study showed positive outcomes of mother's primary education on birth weight, height and health of child. Compulsory schooling also helped to improve the other health outcomes e.g. reduced smoking, fertility and increased age at first birth of mothers (Günes, 2015).

Along with the formal education, enhanced reading skills are also very much essential for mother and child survival. Good reading skills of mother can also help to reduce the child mortality (Smith-Greenaway, 2013). Economic prosperity and development in education of mother has helped to reduce child mortality in more than 60% counties of China (Wang, Li, Zhou, Luo, Liang, Liddell, Coates, Gao, Wang, He, and Kang, 2016). Maternal education can give equal results whether in rural settings or urban slums. Even basic health education of the mother helps to increase vaccination coverage (Johri, Subramanian, Sylvestre, Dudeja, Chandra, Koné, Sharma, and Pahwa, 2015).

Another study conducted in South Africa showed the same findings, that mother's level of education influences U5M. Mother's higher education was found to be associated with low U5M than mothers with no secondary education. Children whose mothers have completed secondary and higher education were found to be 16 and 39 per cent respectively more likely to survive than those children whose mothers have no education or only have primary education (Zewdie, 2014).

2.5.2 Family income

When there is absence or shortage supply of assets and substances that makes life comfortable in the household, it has effect on child's health (Nasejje, Mwambi, and Achia, 2015). Low birth weight, high neonatal mortality and chronic diseases are attendant consequences of poor socioeconomic level (Quansah, Ohene, Norman, Mireku, and Karikari, 2016). Though, breakthroughs in medical technology can stop infectious diseases causing most of the deaths in early childhood years, the effect of socioeconomic factors cannot be undermined (Nasejje et al, 2015). Poverty makes children from less privilege households vulnerable to inadequate water, poor sanitation, air pollution, undernourishment, etc., which are some of the risks of mortality unlike those who were born to better off families. As a result of this exposure, they suffer diverse diseases (Adepoju, Akanni and Falusi, 2012). A child born to a financially deprived and less educated family is at risk of dying perinatally or within the first month of life. Mothers of such children were probably poor nourished during pregnancy and had little or no antenatal care and might not have delivered at a health facility (Samuel, 2016).

2.5.3 Women employment

Motherhood depends on the quality of care provided by mother on her child. Being an employed mother is tough responsibility especially for the health outcomes of underage children. Working mothers with a good adjustment between workplace and family can provide quality care for their children (Nandi, Hajizadeh, Harper, Koski, Strumpf, and Heymann, 2016). A qualitative study conducted to observe the impact of maternal employment on nutritional and health status of child found that mothers working long hours effect the children's nutritional status and adequate care arrangements (Bongaarts, Blanc, and McCarthy, 2019). However, in some cases the prevalence of child mortality is lower for working mother than unemployed because working mothers have good financial status so they can afford better nutritional and health care services for their children (Adepoju et al., 2012).

2.5.4 Urban versus Rural setting.

According Global Health Observatory data (2013-2015) most of the child deaths happened in urban areas of low and middle-income countries. The difference in rural and urban child deaths varied from country to country however the difference in rural and urban areas was found to be at least “50 deaths per 1000 live births”. A study from Kenya found that trends in childhood morality were found to be more in urban slum areas as compared to the rural and non-slum urban areas (Kimani-Murage, Fotso, Egondi, Abuya, Elungata, Ziraba, Kabiru, and Madise, 2014).

Another study from Bangladesh also reported similar results that under-5 mortality is significantly associated with the type of place of residence. Rates for child mortality were significantly higher for the rural mothers as compared to urban. Children brought up in urban areas had 66% more chances of survival as compared to the one in rural settings (Chowdhury, 2013). The type of setting is considered a determinant of U5M. This is because the survival of young children is closely related to the quality of their physical environment inside and outside the home which affects their exposure to infections and injuries. The type of dwelling, the hygienic conditions, degree of overcrowding and protection against the weather can influence child mortality (Conombo, and Sawadogo, 2017). The Nigeria Demographic and Health Survey (NDHS) revealed that childhood mortality rates differ substantially between urban and rural areas. The under-five mortality rate is lower in urban areas compared with births in rural areas (Oyefara, 2013).

2.6 Biological and Maternal Determinants of U5M

Biological as anything that affects the function and behaviour of a living organism. Internally this factor can be physical, physiological, neurological or genetic. Biological factors are primary determinants of human behavior (Webster, 2010). In this study biological factors are physical circumstances around the birth of the child, such as birth weight and birth size. Age of the mother, sex of the child, birth order, birth interval, complications during pregnancy and labour are biological and maternal determinants of U5M.

2.6.1 Age of the mother at time of childbirth

Age of the mother is a major concern for gestational risk and child mortality (Kropiwiec, Franco, and Amaral, 2017). Pregnancy during the adolescent and older age (>45) are harmful for the child and mother. The level of births in adolescent age have decreased worldwide since 1990 but still fertility in young age (11-19) contributes 11% of the births. Unfortunately, “95% of these births” happen in low and middle-income countries (WHO, 2018). A study with participants from five birth cohorts in Guatemala, India, Brazil, South Africa and Philippines were evaluated for preterm birth, risk of low birth weight child, failure to complete schooling and lower adult height of children with age of mother. Increased risk factors for preterm birth were reported with increasing age of mother. Findings were more novel in Low and Middle-income countries (LMIC). However, children from older age mother were found to have better school progression and adult height attainment (Fall, Sachdev, Osmond, Restrepo-Mendez, Victora, and Martorell, 2015).

Likewise, in Zimbabwe young mothers were found to have 33% increased risk for infant mortality as compared to the older age mothers (Dube, 2012). Similarly, a study in Yoruba society, the data showed that mother’s age at childbirth is a significant factor in explaining the level of childhood mortality in Osun State, Nigeria. The data shows that the lower the age at first childbirth, the higher the level of childhood mortality in the study location. Therefore, adolescent mothers are expected to have higher level of childhood mortality among their children, compared with older mothers in Osun State, Nigeria (Oyefara, 2013).

Likewise, Karmaker, Lahiry, Roy, and Singha, (2014) in a study in Bangladesh, observed that mother’s age at first birth showed a positive relation with neonatal, post-neonatal and infant mortality rates, except in the case of child mortality. This could be due to lack of knowledge on child bearing activities of younger mother and to non-use of available health inputs like hospital delivery and range of vaccinations (Karmaker et al., 2014).

2.6.2 Sex of the child.

New-born female children have natural advantage over new-born boys for survival but in developing countries, like India and China, boys have relatively lower under-5 mortality rates in contrast to girls (UN, 2015). Similarly, another study from India also shows that female child mortality has always been higher than boys in north and central regions of India. Gender discrimination is evident cause for higher female under-5 mortality in India (Kuntla, Goli, and Jain, 2014).

A Research from Nigeria showed significantly higher risks of under-5 death for male children in comparison to female (Ezeh, Agho, Dibley, Hall, and Page, 2015). Similar results were observed in another analysis from several countries of Sub-Saharan Africa that male children have significantly higher chances of mortality than girls before reaching age five (Boco, 2015). Other studies showed that infants and under-5 male children are more likely to die compared to female children (Singh and Tripathi, 2013; Nasejje et al., 2015). A study in rural Nigeria, found that mortality is higher among female children than male children in the study area. This is said to be expected in the context of Nigeria, where gender discrimination in favour of the male child is the norm (Adepoju, 2015). In another study conducted in Tanzania female mortality was high as compare to their male counterparts (Lugangira and Kalokola, 2017).

2.6.3 Birth Order

High mortality has been associated with being the first born and with high birth order (Kozuki and Walker, 2013). A study conducted in Pakistan revealed that children born after two births have higher probability of mortality during their first five years of life. The percentage estimates explain that children born after the birth-order of two have 1.74 times higher mortality than their counterparts born at first or second birth-order (Khan, Bari, and Raza, 2018).This finding is also supported by literature (Ezeh et al., 2015; Khan and Awan 2017). In a study to determine the impact of maternal and child health (MCH) services on child survival in a socio-economically poor rural Pondicherry, India, infants of

birth order 1 or more than 4 had higher mortality rates while birth order 2 infants had the least mortality.

A study conducted in Taiwan showed that mothers aged 19 years or less, those giving birth to either their first children or to their fifth or later child, and those who had their first prenatal care visit after the first three months of pregnancy were associated with increased risk of early neonatal deaths (Lin, Liu and Qian, 2014). In Yemen, the infant mortality rate was 110 deaths per 1,000 live births for first births and decreased to 76 deaths per 1,000 live births for fourth to sixth order births, then increases for birth order 7 or higher (Al-Waeel, 2015).

In a study to assess risk factors for infant mortality in a rural community in Nigeria, first birth order and older mothers (>34 years) at time of infant death were found to be associated with significantly higher risk for mortality(p=0.004) (Adedini, Odimegwu, Imasiku, Ononokpono, and Ibisomi, 2015).

2.6.4 Birth interval

Several studies have demonstrated that birth-interval has negative influence on child mortality. A study conducted in Kenya suggest that in infancy, a preceding birth interval of less than 18 months is associated with a two-fold increase in mortality risks (compared with lengthened intervals of 36 months or longer), while an interval of 18–23 months is associated with an increase of 18%. During the early childhood period, children born within 18 months of an elder sibling are more than twice as likely to die as those born after an interval of 36 months or more. Only 592 children experienced the birth of a younger sibling within 20 months; their second-year mortality was about twice as high as that of other children (Fotso, Cleland, Mberu, Mutua, and Elungata, 2013).

Children born with shorter birth-interval have less probability of survival as compared to children born after more than 24 months birth-interval. This is also supported by the

average estimates, i.e. the mortality in children born with shorter birth-interval is 11.8 percent and that in children with longer birth interval is 4.9 percent (Khan and Awan 2017). This is confirmed by data extracted from several developing countries demographic surveys which suggests that children with shorter preceding intervals had increased odds of both neonatal (<24 months, OR: 1.61, 95% CI: 1.52-1.70) and under-five mortality (<24 months, OR: 1.48, 95% CI: 1.40-1.56). (Kozuki, and Walker, 2013).

In another retrospective analysis conducted in Afghanistan, children with a previous birth interval of less than 18 months have a higher risk of dying from certain causes of death, including sepsis and diarrhoea, than children with a previous birth interval of 24-35 months. In addition, children with a previous birth interval of at least 60 months also have a higher risk of dying from certain causes, including diarrhea and low birth weight, than children with a previous birth interval of 24-35 months (Al Kibria, Burrowes, Choudhury, Sharmeen, Ghosh, Mahmud, and Angela, 2018).

2.6.5 Complications during pregnancy

Literature indicates that, complications during pregnancy are a significant factor in child mortality. Complications in pregnancy and childbirth is common amongst adolescent girls and is one of the leading causes of child mortality in developing countries. Most of these complications develop during pregnancy and are preventable and treatable. Other complications may exist before pregnancy but are worsened during pregnancy especially if not managed as part of women's care. The major complications being severe bleeding, infections, high blood pressure during pregnancy and complications from delivery. Some of the complications are associated with disease like malaria and HIV/AIDS during pregnancy (WHO, 2018).

According to UN (2018), preterm birth complications accounted for (18%) of under five deaths in 2016. World Health Statistics (WHS) (2015), found pre-term birth complications to be the leading cause of U5M accounting for (17%) of under five deaths. During the

same year United Nations found that the leading causes of neonatal deaths worldwide were pre-term birth complications. The above assertions are similar to WHO (2013) report which found preterm birth to be the leading causes of neonatal deaths.

2.6.6 Complications during labor and delivery

The WHO (2015) found that pregnancy-induced hypertension, obstructed labor due to smallness of the pelvis and malaria infections are the most common causes of morbidity and mortality among younger women and first pregnancy. Mortality among the infants of higher parity women often results from underlying biological factors, such as genetic defects, maternal depletion, low birth weight and a greater risk of birth problems, including placental abnormalities which may result in a ruptured uterus. Birth asphyxia, defined as the failure to establish breathing at birth, accounts for an estimated 900 000 deaths each year and is one of the primary causes of early neonatal mortality (WHO, 2018). World Health Statistics (WHS) (2015) also found birth asphyxia to be the third leading cause of U5M accounting for (11%) of under-five deaths.

In 2015, United Nations found complications during labour and delivery, and during sepsis to be the other leading causes of neonatal deaths worldwide (UN, 2015b). The above assertions are similar to WHO (2013) report which found preterm birth, intrapartum-related complications (birth asphyxia or lack of breathing at birth), and infections to be the leading causes of neonatal deaths. Acute respiratory infections are normally owing to low birth weight, malnutrition, non-breastfeeding and overcrowding conditions (WHO,2013). Birth asphyxia is one of the causes of U5M in high-income countries accounting for (6%) of U5 deaths (UN, 2015).

2.7 Environmental health determinants of U5M

Environmental conditions have long been considered to have a significant influence on mortality. These include access to sanitation, source of drinking water, source of energy and type of dwelling (WHO,2013).

2.7.1 Source of water and access to sanitation

Source of drinking has been negatively associated with under five mortality. A study conducted in Ethiopia shows a child born in a family without access to pipe drinking water was highly exposed to under-five death (Gebretsadik, and Gabreyohannes, 2016).

A study conducted in Kenya found source of drinking water to be a determinant factor (Mbugua, Musikoyo, Ndungi, Sang, Kamau-Mbuthia, and Ngotho,2014). A study in China showed that access to safe water reduced child mortality risks by about 34% in rural areas (Li, Yan, Zeng, Dibley, and Wang, 2015). This may explain why children exposed to water sources that are more likely to be contaminated such as river water are more likely to have diarrheal diseases.

2.7.2 Source of energy

Cooking and heating with solid fuels on open fires or traditional stoves in poorly ventilated indoor environments leads to health hazards. Ezeh et al (2015) suggested that exposure to cooking and heating smoke from polluting fuels is significantly associated with 1-59 months mortality in Nigeria, after controlling for mother's age at birth, water source, asset index and household overcrowding. Indoor pollution affects children more than it affects adults. Availability of electricity at a larger scale in urban areas is another factor that has been identified as contributing to better health outcomes for children in the urban settings compared to those in rural areas (Chikovore, 2013).

In urban areas where there is electricity and families use electricity for cooking, young children are less exposed to harmful gases that might be a source of lung diseases. A study that was conducted by Vanker, Barnett, Nduru, Gie, Sly, and Zar (2015) in South

Africa among children between 1-59 months confirmed that children who live in households that depend on wood, cow dung, paraffin and others fuels that produce harmful gases had higher chances of suffering from fatal lung conditions. All these factors in the long run serve as a disadvantage to children residing in rural areas in comparison to those residing in urban areas.

2.7.3 Type of dwelling

A relationship between type of dwelling and child mortality has been established in a number of studies, namely (Vanker et al., 2015). This is to be expected: brick houses are likely to be more hygienic than those built from informal material or scrap, as is often the case in informal settlements in South Africa. A house that is small and inadequately ventilated will have an adverse effect on a child's health (Chikovore, 2013). The situation becomes even worse where there is overcrowding: children become more prone to communicable diseases. Child illnesses such as diarrhoea, acute respiratory infections and fever are affected by family size, housing and parental education.

Fayehun (2010) found out that there is a significant relationship between the environment of the household and child's survival in Sub-Saharan countries. Some of these differences in childhood mortality could be accounted and explained by levels environmental health hazards of household's are exposed to. In addition, access to piped water, sanitation and availability of toilets have been found to reduce risks of mortality (Muriithi and Murithi, 2015; Omolo, 2013).

2.8 Nutrition deficiency as determinant of U5M

Adequate nutrition is one of the important determinant to children survival. There is a relationship between poor nutrition and infant mortality. Poor breastfeeding and malnutrition has been linked under five mortality in many countries around the globe (CoMMiC, 2014)

2.8.1 Breast feeding

Breastfeeding is significant to a child survival and there is evidence of higher under-five death among children who were not breastfed than those breastfed. A study conducted in Kenya showed that children who were breastfed for more than 6 months have significantly lower probability of mortality compared to children breastfed for less than 6 months (Ettarh, and Kimani, 2012). This may be due to the fact that antimicrobial and anti-inflammatory factors in breast milk provide protection from infection. Karmaker et al (2014) study in Bangladesh showed that breastfeeding reduce infant and child mortality to some extent as exclusively breastfed children are nutritionally better and they become naturally immune. Similarly, a study conducted in Ethiopia indicated that children who are breastfed have a lower risk of mortality than those not breastfed (Geneti and Deressa, 2014).

2.8.2 Malnutrition

Malnutrition is another factor associated with U5M. Lack of breastfeeding during the first 2 years of life increases the risk of diarrhoea morbidity and mortality and pneumonia mortality. Undernutrition is a key shared risk factor for morbidity and mortality associated with diarrhoea and pneumonia. Underweight, stunting, and wasting increase the risk of mortality from both diarrhoea and pneumonia with the risk increasing as the degree of undernutrition increases (Walker et al., 2013). Malnutrition remains a problem and contribute as both primary and underlying cause of U5M in South Africa, about thirty percent of children who died between 2010 and 2013 were classified as being severely malnourished (CoMMiC, 2014). In Limpopo province severe malnutrition contributed to 41.0%, 44.1%, 42.0% and 39.2% of under five deaths which occurred in South Africa in 2010, 2011, 2012 and 2013 respectively. Vhembe District had the highest number of child deaths due to malnutrition which was 55.9% (CoMMiC, 2014).

2.9 Health Care as A Determinant of U5M.

The quality and access to health care institutions are also determinants of U5M. Most developing countries have poor public health facilities and access is difficult therefore U5M rate are very high. Despite U5M being a priority in most developing countries majority of child survival has been linked to these facilities (Harrison, 2009).

2.9.1 Access to health care and use of ante-natal care services

Access to health care and use of ante natal services can influence U5M. The main providers of mother and child health (MCH) services in South Africa are the government and non-governmental sectors. Preventative MCH services are normally antenatal care, immunization, growth monitoring, nutritional advice, oral rehydration and contraception. These services are widely available in South Africa especially in the urban areas (Harrison, 2009).

In South Africa, the COMMIC report noted that access to health care for sick children is still a problem in South Africa. The report documented that more than half (55%) of all registered child deaths occurred outside the health service, although many of these children had prior contact with the health service just before dying. Only 36% of deaths in the post-neonatal period (1 month to 5 years) occurred in health facilities. The report also noted that 30% of the factors leading to U5M included the failure by the caregiver to recognise a child's severity of illness, delays in seeking care for the child and inadequate nutrition. Transport availability and costs were identified as the key determinant of health care access for many South Africans. The delay in seeking health care and the use of traditional medication was found to have contributed to the death of many children. In 164 cases of under-five deaths health care workers perceived that there was a delay in care seeking and in 78 cases a traditional remedy which had harmful effect on the child was given before accessing health care (CoMMiC, 2014).

A study conducted in Nigeria illustrated that knowledge about the symptoms of a disease by a caregiver can encourage early detection at home and presentation to the health

facility for appropriate treatment. Delay in accessing appropriate treatment can enhance progression of disease to severe forms leading to U5M. It also found that an educated woman is more likely to seek health care from a competent source than an uneducated one (Abhulimhen-Iyoba and Israel-aina, 2014).

2.9.2 Quality of health care service

Health care services including higher coverage with immunization, safe delivery of birth, are more developed in urban area than rural area in some countries. The availability of adequate health service may bring the mortality rate significantly down for the children between 1 to 4 years (Oyefara, 2013).

In South Africa, among 70% health system factors associated with U5M most (80%) related to health personnel. Many hospitals audits continue to identify significant gaps in the prevention; treatment and support services children receive for example inadequate notes on clinical care, child's growth problems inadequately identified or classified, inadequate assessment for HIV, and delayed referral for severe malnutrition, weight loss or growth faltering. These gaps are due to deficiencies in human resources including doctors, nurses and community health care workers. The report recommended training to ensure there are capacitated front line health care workers in order to reduce child morbidity and mortality. The report also noted that the main contributory factors to pneumonia and diarrhoeal deaths was the lack of access to high care and or ICU facilities at referral sites for children with severe conditions (CoMMiC, 2014). The shortage of doctors means there is limited access to more specialized services.

In a study conducted in Nigeria women mentioned caring attitude of health workers as the major factor that contribute to child mortality. They considered the quality of care to be more important as compared to the cost. Similar findings were observed in Bangladesh, Yemen and studies in Nigeria and other African countries where underutilization of maternal and child services was attributed to the poor behavior of staff and preference for a more friendly atmosphere. The provision of adequate numbers of properly trained health workers at well-equipped health facilities is essential, and if

implemented will improve use of available services and contribute to reduction in maternal and child mortality rates. Agunwa, Obi, Ndu, Omotowo, Idoko, Umeobieri and Aniwada, 2017).

2.10 Cultural and religious factors as determinants of U5M

Parental cultural beliefs and practices can influence their health-seeking behaviour, place of pre-hospital management and consequently influence the progression of disease and mortality. For example, both tradition and indigenous religions have a strong bearing on the child mortality rate in Africa. Some religious groups do not allow their children to be immunised, neither do they permit the use of modern medications for the treatment of their illnesses. Delay in accessing appropriate treatment contributes to U5M. A study conducted in Nigeria illustrated that majority of the mothers self-medicated their under-fives before going to hospital, some children were taken to chemist, some went to herbalists and prayer houses, administered native concoction, scarification marks, fire to feet and some did nothing. The study shows these behaviours are more associated with U5M than those that seek treatment (Adepoju, Akanni, and Falusi, 2015). A study among the Yoruba found that measles attack is considered punishment for breaking family taboos or an evil deed from the witches. Diarrhoea is perceived as a means of getting rid of body impurities or as a sign of teething or crawling. Such cultural practices, beliefs and norms are associated with U5M as mothers with this view will not use health services (Oyefara, 2013).

2.11 Global Response (MDG and SDG)

In the beginning of new millennium, leaders of the world gathered and signed eight millennium development goals supported by all the countries of world and development institutions. Goal 4 of the eight MDGs was to reduce the child mortality by two third globally especially in the developing countries during the period of 1990 and 2015 (WHO, 2015). U5M was reduced by 53% in 25 years, thus MDG4 target was not achieved. However, “sixty-two countries achieved the MDG4 target of reducing, among them

twenty-four were low and middle-income countries (Maluleke and Chola, 2016). Sub-Saharan Africa was the region with least development in child mortality during the MDG era, frequently marked as “off-track”. Though the Sub-Saharan Africa did not achieve the target yet the progress towards child survival was most prominent in all aspects since 2000-2015 (Cha, 2017).

Post-2015 era marked the start of Sustainable development goals (SDGs) (UN, 2015). The SDGs target is to decrease under-5 mortality by not more than “25 per 1000 live births and infant mortality less than 12 per 1000 live births” (Liu, Oza, Hogan, Chu, Perin, Zhu, Lawn, Cousens, Mathers, and Black, 2016).The number of children dying every day has reduced incredibly since 1990 but still the number of dying children under the age of 5 is more than six million per year. Unfortunately, four out of every five deaths occur in Southern Asia and Sub-Saharan Africa (UN, 2015). Serious efforts to maintain the disease control and prevention programs for rapid reduction in Under-5 mortality is needed. Joint and integrated actions can help to achieve the SDG goal by 2030 (Maluleke and Chola, 2016). While formulating strategies, all countries should keep in focus the U5M and cause of death profile (Liu et al., 2016).

2.12 Legislation, Services and Government Plans to Reduce U5M In South Africa.

The South African government through the Department of Health has been committed to reduce child mortality. Clinical guidelines and policies were introduced to prevent the U5M in South African health institutions and communities.

2.12.1 Health legislation

The Constitution of the Republic of South Africa guarantees the right to basic health care for all. The Health Act, 61 of 2003 provides for the rights of all pregnant women and children under the age of six years to free health care. Other legislation supporting improved child-health access and outcomes include the Nursing Act of 2005, which provides for the introduction of mandatory community service for nurses; the Medicines and Related Substances Amendment Act, 59 of 2002, which provides for transparency in the pricing of medicines; and the National Health Amendment Bill (2010), which f

established an independent entity to ensure that all health establishments comply with minimum standards through an independent entity (StatsSA, 2015).

2.12.2 Primary health-care re-engineering

To improve equity in access to healthcare services, in 1994 healthcare user fees for pregnant women and children under the age of six years were discontinued. This resulted in an increase in clinic visits amongst pregnant women and children. This was followed by the 2010 Primary Healthcare Reengineering Strategy which aims to bring healthcare services closer to people through the provision of primary healthcare at household level by community healthcare workers and the strengthening of school health services by means of the Integrated School Health Programme (StatsSA, 2015).

2.12.3 Integrated Management of Child Illnesses

Integrated Management of Child Illnesses (IMCI) was instituted in 1994 to foster child health. IMCI strategy is aimed at reducing U5M for common childhood sicknesses. The strategy promotes immunisation and growth monitoring. (Kibel, Saloojee, and Westwood, 2012).

2.12.4 National Perinatal and Neonatal Morbidity and Mortality Committee and Committee on Morbidity and Mortality in Children under 5 Years

The National Perinatal and Neonatal Morbidity and Mortality Committee (NaPeMMCo) was established in 2008 to audit all perinatal and neonatal deaths occurring in the country, to produce annual reports and to make recommendations on solutions for the reduction of perinatal and neonatal deaths (StatsSA,2015). The ministerial Committee on Morbidity and Mortality of Children under-5 Years (CoMMiC) was also established in 2008 to review childhood deaths in South Africa. It facilitates the governance and development of appropriate standards of health care for children (CoMMiC, 2014).

2.12.5 Campaign for Accelerated Reduction in Maternal and Child Mortality in Africa

In 2012 the Campaign for Accelerated Reduction in Maternal and Child Mortality in Africa CARMMA was launched in South Africa to strengthen access to sexual and reproductive health services, promoting early antenatal care, improving access to skilled birth attendants, strengthening human resources, improving child survival by promoting effective interventions and improving access to ART (StatsSA, 2015).

2.12.6 Promotion of proper infant feeding and Expanded Programme on Immunisation.

According to StatsSA (2015), the government revised breastfeeding policy to actively promote breastfeeding, especially exclusive breastfeeding for the first six months of life, and the introduction of complementary feeding thereafter. South Africa has sustained high coverage of all essential vaccines. This has resulted in reduction in neonatal tetanus, deaths due to measles; and the attainment of a polio-free status. In 2009, the country became the first in sub-Saharan Africa to include the pneumococcal and rotavirus vaccines in its routine child immunisations schedule (Kibel et al., 2012).

2.12.7 Maternal, Neonatal, Child and Women's Health and Nutrition Strategic Plan.

The Maternal, Neonatal, Child and Women's Health and Nutrition Strategic Plan (MNCWHN) 2012-2016 focuses on improving coverage, quality and equitable access to priority interventions on reducing maternal, neonatal and child mortality. It addresses the social determinants of health, strengthening PHC interventions at district level, and strengthening the capacity of health systems and human resources (StatsSA, 2015).

2.12.8 Prevention of mother-to-child transmission of HIV

In 2014 the coverage of the PMTCT programme, which includes early infant testing at six weeks, increased significantly. The indicator used to monitor PMTCT is the proportion of infants who test positive for HIV at six weeks. Coverage for early infant diagnosis of HIV in newborns now stands at 88%. According to 2010 Pediatric HIV guidelines, ART initiation among children has been expanded (Kibel et al., 2012).

2.12.9 Social Assistance-Child Support Grant

These were introduced in 1998 to help children living in poverty. The child support grant helps caregivers to deliver adequate care, including food to their children (Kibel et al., 2012).

2.13 Summary of the chapter

The chapter looked at several determinants and causes of U5M worldwide, in sub Saharan Africa and in South Africa. The chapter ends by looking at legislation, services and government plans to reduce U5M in South Africa.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter presented literature on causes and determinants of U5M. This chapter presents the research methodologies that were employed, for the study to be successful. The following aspects are addressed in this chapter: the research approach and designs, the study setting, study population and sampling method, data collection instrument, data collection, data analysis, ethical considerations and dissemination of results.

3.2 Research Approach

LoBiondo-Wood and Haber (2014) state in qualitative approach, research design is about how the qualitative researcher plans to go about answering research questions. A qualitative approach, explorative, descriptive was used in this study. A qualitative approach was suitable for this research since the aim of the study was to explore and describe the causes and determinants of under-five mortality, which could not be captured in numbers. Making use of a qualitative research approach gave the mothers an opportunity to narrate the circumstances that led to the death of their children and what they think were the causes of death of their children. Mothers were awarded enough time to respond to questions which the investigator posed to them, without any limitations. The approach was relevant for this study due to its nature of reporting detailed views of the mothers in their natural setting. The study wanted to describe the context of U5M in Mhinga.

3.2.1 Descriptive design

According to Nueman (2014), a descriptive design is used to provide an in depth and exact image, uncover new data that contradict past data, creates categories or classify types, document causal processes and context of the situation. Descriptive design was suitable for this study because mothers who lost children under five through death were given an opportunity to describe the circumstances that led to the death of their children.

3.2.2 Exploratory design

Exploratory studies are those research projects which the study is conducted in order to gain a clear understanding of an emerging subject. They are mostly conducted when little information is available about the phenomenon and give the study a chance to explore more (Kumar, 2019). The study explored the determinants contributing to U5M in Mhinga and revealed what the mothers and the children went through leading to the death of their children. Finally, the study explored literature that is relevant to U5M during literature control.

3.3 Study Setting

Research setting is a specific location used to conduct a study. There are three common settings in health research. These are natural, partially controlled and highly controlled setting. This study will be conducted in a natural setting which is defined as uncontrolled real-life environment (Grove, Gray, and Burns, 2015) in Mhinga Village Vhembe District, Limpopo Province. The Vhembe District occupies 25 597 km² on the northern border of Limpopo Province and of South Africa itself and had estimated population of 1.3 million people according to 2011Census. Mhinga Village is located 10km from Punda Maria Gate of Kruger National Park, 58km from Thohoyandou and 34 km from Malamulele town. It was established in 1965 under Mhinga Traditional Authority in Thulamela Municipality, Vhembe District, Limpopo Province of South Africa. The area is composed mainly of Tsonga people who are originally from Mhinga and some from Mozambique. The Village

consists of various sections, namely Mhinga Zone 1, Zone 2, Zone 3, Mhingaville, Botsoleni, Josefa, Matiyani, Maphophe, Qaza, Makuleke and Makahlule. These communities have 474, 566, 769, 2260, 748, 970, 1875, 684, 987, 329 and 825 households respectively. The population of Mhinga is 30 000. Most of the population was described as unemployed. Most of the people in Mhinga practice the Xitsonga culture and way of living. There is one clinic in the community and the nearest hospital is in Malamule. Majority of the residents in Mhinga are illiterate and they depend on subsistence farming and government welfare grants for survival. A topographical map showing Mhinga village is shown below figure 3.1 below

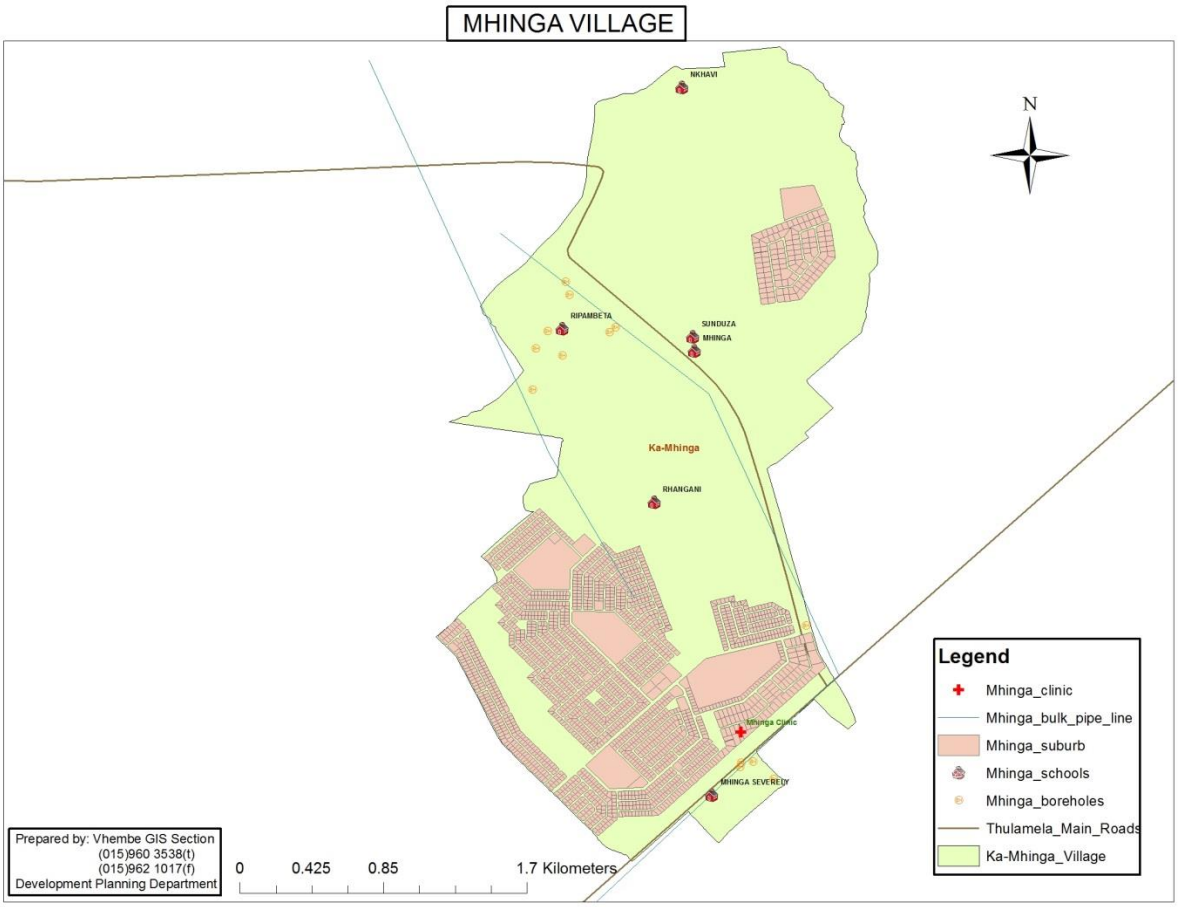

Figure 3.1 : Mhinga village map, Vhembe District Municipality GIS section (Mulaudzi, 2016)

3.4 Study Population

Population in general is a large collection of individuals or objects that is the focus of a scientific query (Robinson, 2014). The population for this study were mothers who lost children under five years of age through death, who are residents of Mhinga.

3.5 Sampling method

According LoBiondo-Wood and Haber (2017) sampling is the process of selecting representative units of the population in the study. Nonprobability sampling method were used to select the participants. The study used non-probability purposive sampling technique to select individuals with rich information regarding child mortality. The researcher used her expert judgement in selecting participants that purposefully informed understandings on the purpose of the research. The researcher with the assistance of the headman selected the mothers who adhered to the sampling criteria. In addition, the researcher knew only few individuals who may have rich information, snowballing technique was used to access other participants. Snow balling technique- is when the researcher gets information from the previous participants to select some of the information rich participants. The researcher was assisted by the village headman to access the mothers who fit the following criteria

Inclusion criteria

- Mothers who lost children under five years of age through death
- Mothers who are residents of Mhinga
- Mothers who lost the children within the past 5 years (2013 to 2017).

3.5.1 Sample size

Sample size plays an important role in research however in qualitative research data saturation determines sample size (LoBiondo-Wood and Haber, 2017). As a characteristic of qualitative research, the study focussed on quality of information we

wanted to know rather than on the size of the sample (LoBiondo-Wood and Haber, 2017). This ensured that the number of participants was adequate when saturation of information (the point at which no new information emerges from the data) was achieved. Saturation was decided by the researcher, supervisors and the independent coder who analysed the data.

3.6 Data Collection and process

Data collection is described as the gathering of information that is relevant to address a research question or hypothesis (Polit and Beck, 2012). Therefore, the primary method of data collection in qualitative research is by interviewing study participants. The data collection method was guided by questions in the interview guide. Data was collected through in-depth interviews with individual participants. Before the interview, the purpose and objectives of the study were explained to the participants. Participants were informed about their rights of participation in the study. The use of a voice recorder was explained to the participants and each participant signed a consent form. Appointments were arranged with the mothers telephonically before the interviews, visited their homes and clearly explained to them that they are relevant sources of information for the study that is being conducted and that their participation in the study will give them an opportunity to talk about their experiences of under-five child mortality. Appointments with participants were done before the day of the interview. The time for interviews was set to suit the availability of each participant. Pseudo-names were used to maintain confidentiality. The participants were told the main reason for the use of pseudo-names.

Probing questions were used during the interviews to get an in-depth understanding. A voice recorder was used during the interviews for recording verbal responses during the interview. The interviews were transcribed before being analysed (See Appendix H and Appendix I. The collected data was analysed using the thematic analytical approach.

3.6.1 Pre-Test

In order to determine the feasibility of the methods of the larger scale study, and test the appropriateness of the interview guide, a small study was conducted with two mothers from Mhinga who lost children under five years through death prior to the beginning of the main study. These participants did not form part of the main study. The aim of the pre-test was to define the weakness of the instrument, adjust the questions, make corrections or leave out certain questions, depending on the comments and responses from the participants. Minor corrections on the interview guide were effected after the pre- test. For instance, the central question was not clear and with the help of supervisors and research experts it was refined. (See Appendix G).

3.7 Measures to ensure trustworthiness

Trustworthiness in qualitative research is conceptualised as the validity or rigour of a given study (Morrow, 2005). Trustworthiness in this study was discussed under the following aspects credibility, dependability, transferability and conformability, all these aspects addresses the appropriateness and effective methodologies used in collecting and analysing data.

3.7.1. Credibility

Credibility refers to the truthfulness of the research findings. It is established by making sure that the research findings truly represent the information drawn from the participants' original data and is the correct interpretation of the participant's original views (Anney, 2014). For the purpose of this study, credibility was ensured through prolonged engagement, with participants to build up trust. Probing and follow up questions were used to get more information and clarity on what the respondent meant. The study also ensured credibility by involving a supervisor to provide scholarly guidance throughout the study. Findings were shown to participants to allow them to confirm if the information reflects their true opinions. A voice recorder to increase the reliability of information

collected during the interviews. An independent coder was asked to transcribe the collected data to emphasise the truthfulness of the data.

3.7.2. Dependability

Dependability addresses the issue of reliability. If the same research was to be repeated in the same setting with the same participants will the same results be obtained (Anney, (2014). The study ensured dependability through a detailed explanation of the entire research process, how the data was collected and analysed, and recommendations. An independent coder was used to ensure dependability. Ongoing supervision with the supervisor also ensured dependability of the findings of the study.

3.7.3. Confirmability

According to Anney (2014), confirmability refers to the extent which the research results could be verified by other scholars. The transcribed data was taken back to the participants for confirmation. Extensive literature review was done to identify similarities and differences in the study findings and to confirm whether existing literature supports the findings or not. The study documented the role of the investigator in the research process, including assumptions, biases, or reactions that might have influenced the collection and interpretation of data.

3.7.4. Transferability

According to Anney (2014), transferability focuses on whether the research findings can be applied to other circumstances with other respondents. To ensure transferability, a clear description of the sampling method used to select the participants was provided. The study clearly outlined the methodology used and provided a clear step by step framework of how data will be collected and analyzed.

3. 8 Data analysis

Grove et al (2015) state that data analysis is a process of reducing, organizing and giving meaning to data. Data analysis in this study was carried out concurrently with data collection in this study and data saturation was reached when no new information emerged. This process of data analysis involves making sense out of text and preparing data for analysis and moving deeper and deeper into understanding the data (Creswell 2009). Data was analysed using Tesch's (Creswell, 2009).

Firstly, the researcher read through all the transcripts to make sense of the data and started writing ideas of themes. This was followed by picking the most interesting and short transcript, reading through again and underlined meanings and wrote down the thought. The researcher then made a list of all topics and grouped familiar topics together, and listed major topics, unique topics and left-over topics. Secondly, the researcher took the list of topics and went back to data where all topics were abbreviated as codes and codes were written next to the appropriate segments to see if new categories and codes emerged. Thirdly, the researcher found the most descriptive wording for the topics, and then turned them into categories and then reduced the total list of categories by grouping topics that were related to each other. Finally, a final decision was made on abbreviations for each category and codes were alphabetized and data belonging to each category was assembled in one place where all the existing data was recorded.

3.9 Ethical Considerations.

Ethical considerations were observed throughout the study in order to protect the rights of the participants. To ensure the safety of participants, the study considered the following ethics: permission to conduct the study, informed consent, confidentiality and anonymity, the right to privacy and avoidance of harm.

3.9.1 Permission to conduct research

The proposal was presented to the School Higher Degree Committee (SHDC) and submitted to the University Higher degrees for approval and for quality control. The proposal was further submitted to the Research Ethics Committee of the University of Venda for ethical clearance. After getting the ethical clearance from the Ethics Committee, permission was sought from Department of Health and the Headman of Mhinga to conduct the study. The participants also gave consent to be part of the study.

3.9.2. Informed consent

Informed consent was secured from each of the study participants before the interview was conducted. In securing consent the participants were informed about the objectives of the study, the ethics afforded to them, what was expected of them, how the results will be used and the amount of time they will participate in the study so that they were able to make a decision whether to be part of the study or not. The participants were also given an information letter with details about the study. Participants signed consent forms as an indication of agreement of participation in the study.

3.9.3. Confidentiality

The study should respect the information that was obtained from the participants. It is unethical to disclose such information to unauthorized individuals. The participants were assured that the information provided by them would be treated confidentially and that only the investigator and the supervisors would have access to the data; and that the tapes will be kept in a safe place where no one could reach them. Pseudo names were used to help ensure anonymity.

3.9.4. Privacy

Privacy is defined as that which normally is not intended for others to observe or analyse. To ensure participants privacy the interview notes, recordings and information related to the respondents' data were kept in a safe place where no one can access them. Data were collected individually, at a venue convenient for the participant to ensure the privacy of participants.

3.9.5 Non-maleficence (No harm to participants)

Non-maleficence is the principle of doing no harm to research participants (Grove et al., 2015). Non maleficence was ensured by eliminating questions which provoked individuals or belittle or demean somebody. The environment in which interviews were conducted was safe. The investigator understood the sensitive nature of the study and that it could raise some emotions in the mothers. The study did not ask sensitive questions like feelings attached to the loss of their children. The investigator is a social worker with experience in offering bereavement and grief counseling and could have been able to help participants deal with emotions that could arise during interviewing. However, the investigator arranged psychologists and social workers to offer counselling to the mothers who were going to be affected by participating in this study.

3.10. Dissemination of Results.

The findings of this study and recommendations will be kept at the University of Venda library. The findings will also be published in peer-reviewed and accredited national and international journals, as well as presented at seminars and conferences. The findings will be made available to the Department of health so that they can help in shaping programmes that address the determinants of U5M and promote child survival.

3.11 Summary

This chapter provided the details of the research methodology that was used. This includes research design, study setting, the target population and sampling method, data collection tool and data collection, measures to ensure trustworthiness and ethical consideration and data analysis. Finally, the scope of the study and how the results were disseminated was highlighted.

CHAPTER 4

RESULTS AND DISCUSSIONS OF THE FINDINGS

4.1 Introduction

The previous presented the research methodologies that were employed, for the study to be successful. This chapter presents the findings of the study. Thematic analytical approach was used to analyse the data. The findings were organised into themes, categories and subcategories originating from data analysis. This chapter illustrates the findings from the in-depth interviews that were conducted with 7 mothers who lost children under five years of age through death. The sample description and demographic information of participants are presented first.

The purpose of the study was to explore the determinants of under-five mortality in Mhinga Village, Vhembe District, South Africa and the objectives were:

- To identify the determinants of U5M in Mhinga
- To describe the determinants of U5M in Mhinga.
- To identify the causes of U5M in Mhinga.

4.2 Participants' Socio-demographic information

A total of 7 mothers from Mhinga who lost children under five years of age through death participated in the study.

4.2.1 Age

Figure 4.1 below present the distribution of the age. The ages of participants ranged from 18 years to above 41years, wherein the majority (43%) were those between 18 -25 years, with only one was above the age of 41. In the literature there are studies that have confirmed that the age of the mother determines the survival of the child. A study with

participants from five birth cohorts in Guatemala, India, Brazil, South Africa and Philippines were evaluated for preterm birth, risk of low birth weight child, failure to complete schooling and lower adult height of children with age of mother. Increased risk factors for preterm birth were reported with increasing age of mother. Findings were more novel in Low and Middle-income countries (LMIC). However, children from older age mother were found to have better school progression and adult height attainment (Fall et al., 2015).

Similar findings were reported in Zimbabwe were whereby young mothers were found to have 33% increased risk for infant mortality as compared to the older age mothers (Dube, 2012). Similarly, a study in Yoruba society, the data showed that mother's age at childbirth is a significant factor in explaining the level of childhood mortality in Osun State, Nigeria. The data shows that the lower the age at first childbirth, the higher the level of childhood mortality in the study location. Therefore, adolescent mothers are expected to have higher level of childhood mortality among their children, compared with older mothers in Osun State, Nigeria (Oyefara, 2013). Likewise, Karmaker et al (2014) in a study in Bangladesh, observed that mother's age at first birth showed a positive relation with neonatal, post-neonatal and infant mortality rates, except in the case of child mortality. This could be due to lack of knowledge on childbearing activities of younger mother and to non-use of available health inputs like hospital delivery and range of vaccinations (Karmaker et al., 2014). However, in this study age of the mother was not seen as determinant of under-five child mortality.

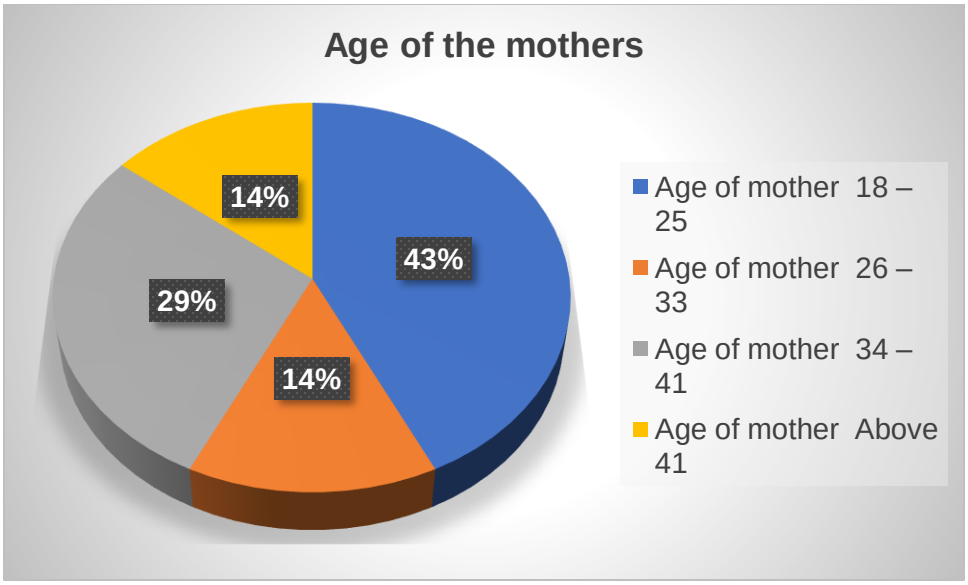

Figure 4.1: Age distribution of the mothers

4.2.2 Marital status of the mothers

Majority of the participants were not married 57% and 43% were not married (See figure 4.2). In the literature there are studies that have confirmed that the marital status of the mother determines the survival of the child (Yaya, Bishwajit, Okonofua, and Uthman, 2018). In sub-Saharan Africa, a region with the highest levels of child mortality, children of ever unmarried women face considerable disadvantage (Clark and Hamplová, 2013). In Burkina Faso children of divorced parents experience higher estimated mortality risks under age 5 (Thiombiano, LeGrand, and Kobiané, 2013). However, in this study marital status of the mother was not seen as determinant of under-five child mortality.

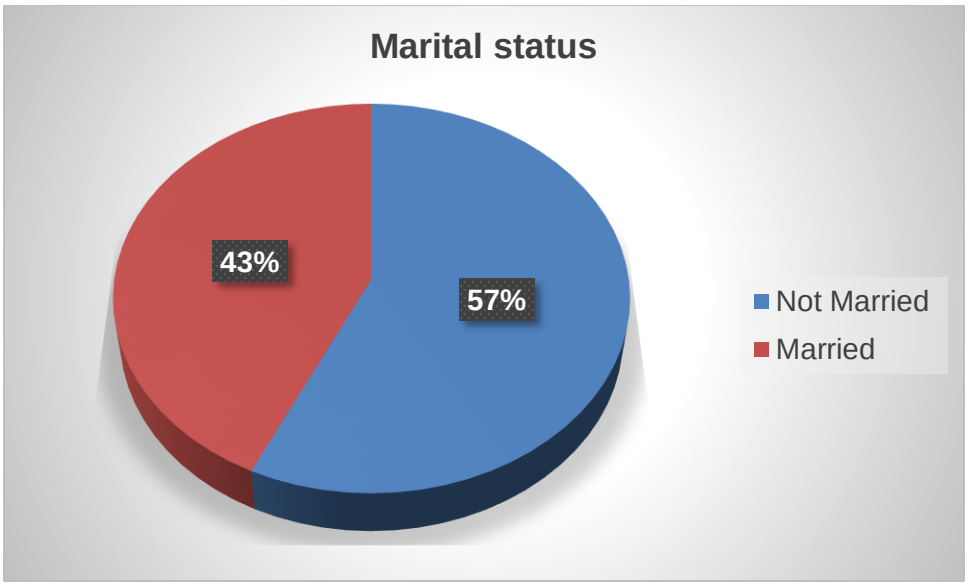

Figure 4.2: Marital status of the participants

4.2.3 Level of education

Figure 4.3 below reflects the highest qualification of the mothers. In this study only 14% of the participants had matric and 86% had less than matric. In the literature mothers' level of education has been confirmed to strong determinant of under-five child mortality. Mother's level of education is considered a determinant of U5M. For safe feeding practices and protection from childhood infections, an infant depends on the quality of care from its mother at home and mother child health services. This care begins with proper antenatal and birth care to ensure the delivery of a strong and healthy infant. The quality of childcare provided by the mother is strongly related to her education level. There is also strong evidence in literature on the inverse relationship between the mother's education and the survival of her children. For instance, Turkey Demographic Health Survey showed that a mother's high education level can help to make better child health, fertility and health seeking behavior (Grepin and Bharadwaj, 2015). Law for Compulsory primary education of mother was introduced in Turkey in order to improve child health. A cohort study on the effect of the Compulsory School Law was evaluated. Results from the

study showed positive outcomes of mother's primary education on birth weight, height and health of child. Compulsory schooling also helped to improve the other health outcomes e.g. reduced smoking, fertility and increased age at first birth of mothers (Günes, 2015).

Along with the formal education, enhanced reading skills are also very much essential for mother and child survival. Good reading skills of mother can also help to reduce the child mortality (Smith-Greenaway, 2013). Economic prosperity and development in education of mother has helped to reduce child mortality in more than 60% counties of China (Wang et al., 2016). Maternal education can give equal results whether in rural settings or urban slums. Even basic health education of the mother helps to increase vaccination coverage (Johri et al., 2015). However, in this study level of education of the mothers was not seen as determinant of under-five child mortality.

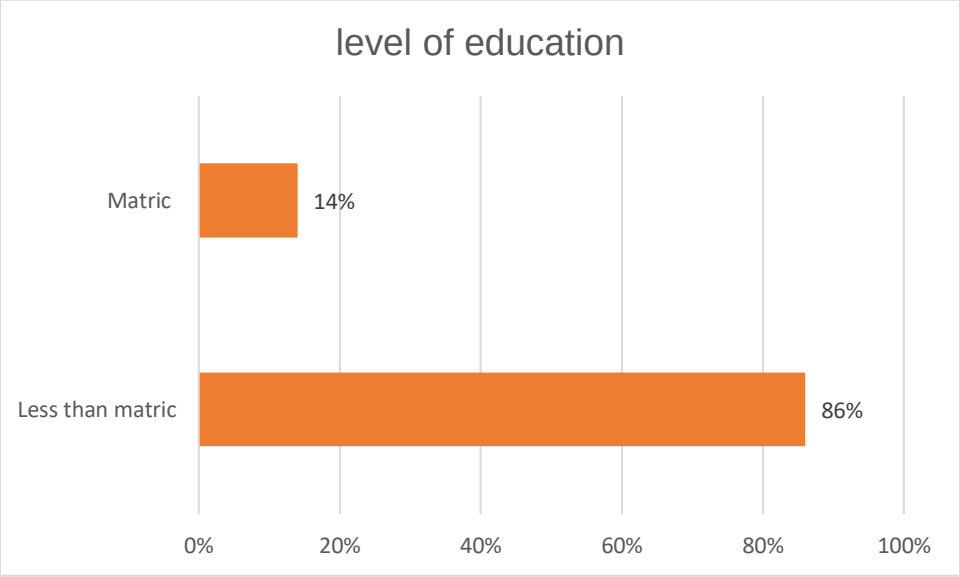

Figure 4.3: level of education of the participants

4.2.4 Employment

All the 7 participants were unemployed at the time of the study. Motherhood depends on the quality of care provided by mother on her child. Being an employed mother is tough responsibility especially for the health outcomes of underage children. Working mothers with a good adjustment between workplace and family can provide quality care for their children (Nandi et al., 2016). A qualitative study conducted to observe the impact of maternal employment on nutritional and health status of child found that mothers working long hours effect the children's nutritional status and adequate care arrangements (Bongaarts et al., 2019). However, in some cases the prevalence of child mortality is lower for working mother than unemployed because working mothers have good financial status so they can afford better nutritional and health care services for their children (Adepoju et al., 2012). However, in this study employment status of the mothers was not seen as determinant of under-five child mortality.

4.2.5 Year child born

All the deceased children were born between 2013 and 2015

4.2.6 Year of child `s death

Majority (57%) of the children died when they were less than 6 months old of which the majority were female 71%. Most of the children 57% died when they were less than 6 months old. (See figure 4.4).

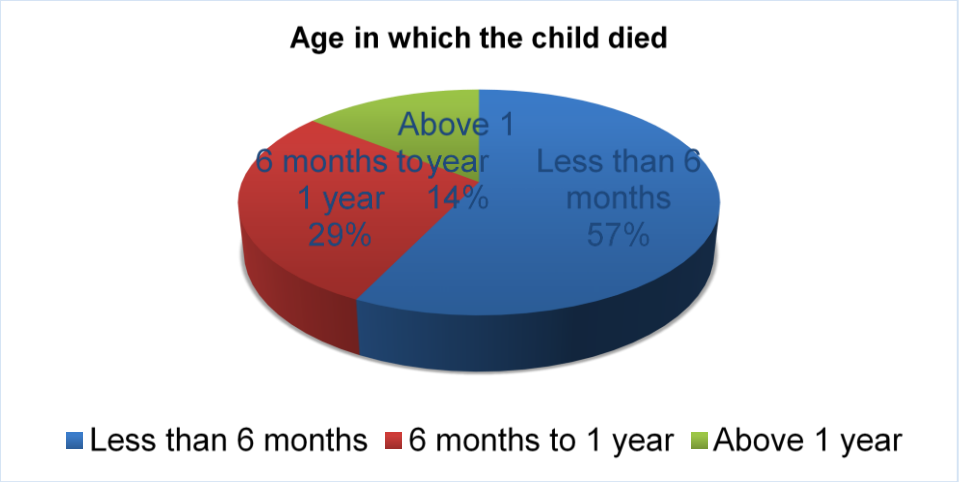

Figure 4.4: Year in which children died

4.2.7 Gender of the child

Majority (71%) of the children who died were females (see figure 4.5). Similar findings were reported in the literature New-born female children have natural advantage over new-born boys for survival but in developing countries, like India and China, boys have relatively lower under-5 mortality rates in contrast to girls (UN, 2015). Similarly, another study from India also shows that female child mortality has always been higher than boys in north and central regions of India. Gender discrimination is evident cause for higher female under-5 mortality in India (Kuntla et al., 2014).

A Research from Nigeria showed significantly higher risks of under-5 death for male children in comparison to female (Ezeh et al., 2015). Similar results were observed in another analysis from several countries of Sub-Saharan Africa that male children have significantly higher chances of mortality than girls before reaching age five (Boco, 2015).

Other studies showed that infants and under-5 male children are more likely to die compared to female children (Singh and Tripathi, 2013; Nasejje et al., 2015). A study in rural Nigeria, found that mortality is higher among female children than male children in

the study area. This is said to be expected in the context of Nigeria, where gender discrimination in favour of the male child is the norm (Adepoju, 2015). In another study conducted in Tanzania female mortality was high as compare to their male counterparts (Lugangira and Kalokola, 2017).

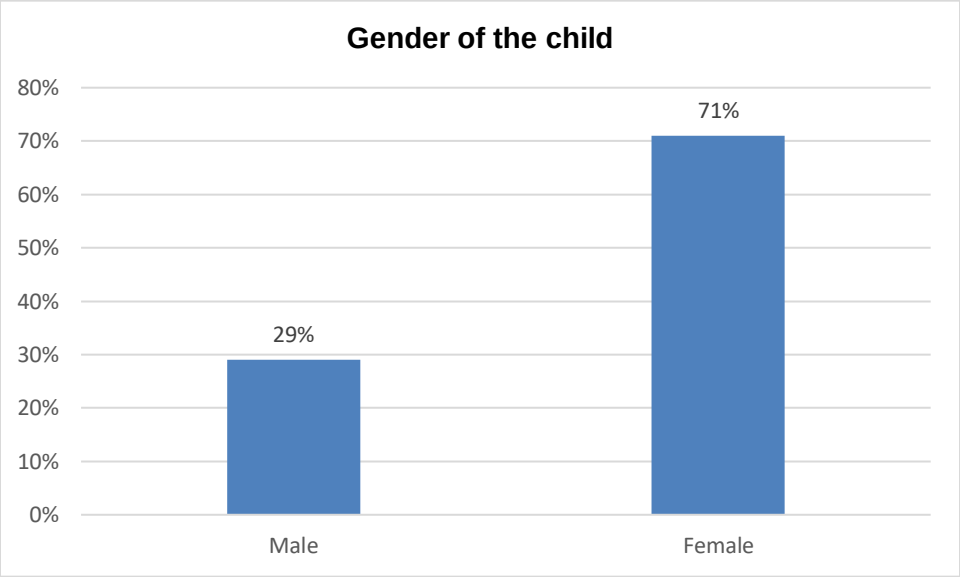

Figure 4.5: Gender of the children who died

4.3 Presentation of study findings

Data collected from mothers was organized into themes which are the central and recurring ideas found in the text. Four main theme which emerged from the data. From these themes, categories which were the content with similar information were grouped. The results are presented in Themes, categories and subcategories. The findings of the study yielded four main themes namely; diseases and infections as a cause of U5M, maternal and perinatal health as a determinant of U5M, health care as a determinant of U5M and cultural factors as a determinant of U5M. The study yielded nine categories namely symptoms, disease, complications during pregnancy, complications during labor and delivery, ineffective use of ANC services, poor service from health practitioners,

cultural beliefs and practices and poor service from traditional healers. The presentation of data is done according to each theme and is discussed separately.

4.3.1 Theme 1: Disease and Infection as a cause of U5M

During interviews bereaved mothers were asked the factors/circumstances that could have led to the death of their children. Bereaved mothers indicated different symptoms and diseases to be associated with the death of their children. Two categories were identified namely symptoms and disease. The categories will be discussed and supported by quotes bellow.

Table 4.1: Theme 1, categories and subcategories

Theme	Categories	Subcategories
1.Disease and infection as a cause of U5M	1.1. Symptoms	Child had flu like symptoms Child not breathing properly Child didn't have a voice High temperature Wounds on throat and cracked mouth Child did not go to the toilet properly Groaning and coughing blood.
	1.2. Disease	Mum was HIV positive Child born HIV positive Diarrhoea and vomiting Breathing problems just after birth – birth asphyxia

Category 1.1: Symptoms

Some of the bereaved mothers talked about the signs and symptoms of the sicknesses that led to the death of their children.

"…For this death to occur, he became sick on Tuesday, he did not have a voice. "The following day was Thursday I heard the child groaning" "The child did not get better and he was no longer going to the toilet properly; he had not gone to the toilet since Thursday, but he was breastfeeding and eating soft porridge..."

"…They checked his temperature, it was high. The child started coughing after coughing came blood; the blood came through the nose…"

"…The child was sick. I don't know the type of the sickness. Sometimes his nose was blocked, at the hospital I explained what I noticed on the child. That's all I can say because they only treated him flu and they discharged the child, so we came back home..."

"…The first one of four months was sick, he had wounds on his throat and cracked mouth. When I seeks assistance, the traditional healers said the child was attacked by rigoni, but they failed to assist the child and he died. The other one got wounds in the mouth; the child had just started walking but ended up dying) ..."

The findings of this study reveal that some of the bereaved mothers could only describe the symptoms of the sickness or condition that their deceased child had, some children's conditions were not diagnosed. The parents described symptoms which include constipation, high temperature, coughing blood, wounds on the throat and cracked mouth. These symptoms were a result of certain conditions, diseases or infections.

Literature indicates common diseases that are associated with U5M not the specific symptoms of the diseases. WHO (2019) report found that infections are one of the leading causes of neonatal deaths? With, malnutrition being the underlying contributing factor of

45% of child deaths as it makes children vulnerable to severe diseases (Bamford et al.,2018). Pneumonia or other acute respiratory infections are normally owing to low birth weight, malnutrition, non-breastfeeding and overcrowding conditions while childhood diarrhoea is normally due to non-breastfeeding, unsafe drinking water and food, poor hygiene practices and malnutrition (WHO,2019). In low-income countries infectious diseases account for a large proportion of under-five deaths while the main killers of children in high-income countries are non-communicable diseases (Tambe et al., 2015). It can be noted that certain symptoms were associated with the conditions or sicknesses that led to U5M in Mhinga.

Category 1. 2: Disease.

Some of the bereaved mothers talked about diseases that led to the death of their children. Summarise what they said…

"…She was sick. I did not know the cause of the sickness. The child was not well and not breathing properly. They found that the child was positive. Me also HIV positive…"

"…The child was sick. At the end I became aware that the child was infected because I had another pregnancy after he died and during that pregnancy, I tested HIV positive…"

"…The fourth month the child started getting sick. She was having diarrhea and vomiting. She was vomiting something like milk. So, when we first took the child to the clinic, they checked malaria because she was having diarrhea and vomiting. The diarrhea and vomiting took a long time until the child passed away…"

"…They said the breathing problem. They said it was caused by hanging herself with my intestine. After hanging herself it causes her to experience difficulty breathing that was the cause of her death…"

"…The child was not well and not breathing properly..."

The data analysed show some bereaved mothers knew diseases which caused their children's death. Two under five deaths were related to HIV/AIDS transmitted from the

mothers, both children had flu like symptoms and breathing problems. Another child had breathing problems immediately after birth. Diarrhea and vomiting was the cause of death for the other child.

Similar findings were reported by different studies and statistics from different parts that suggest that HIV is responsible for child mortality in low income countries. Globally, 120,000 children died due to AIDS-related illnesses in 2016. This equates to 328 deaths every day. In fact, children aged 0–4 years living with HIV are more likely to die than any people living with HIV of any other age (UNAIDS, 2017). The association between mortality risk and HIV-positive mothers is similar to studies in Tanzania, Malawi and Uganda, which found that children born from HIV-infected mothers were more likely to succumb to death compared to those born from HIV-uninfected mothers (Goldberg and Short., 2016). A study conducted in South Africa suggest that HIV and AIDS is the leading cause of child mortality in general (Bamford et al., 2018). In another study conducted in South Africa also suggests that HIV and AIDS was the leading cause of under-five mortality (Nannan, Groenewald, Pillay-van Wyk, Nicol, Msemburi, Dorrington, and Bradshaw, 2019). This is not surprising because HIV and AIDS continues to be one of the top killers in adult population in Sub-Saharan Africa. Zewdie (2014) study on found that HIV has greatest impact on child mortality as compared to other variables because majority of the children acquire HIV from their HIV infected mothers during pregnancy.

This is probably due to the transmission of the HIV virus from mother to child, the disruption of breastfeeding, and the inability of the mother to care for her children when she herself is subject to a terminal illness (Tlou et al., 2018). The death of a mother has adverse effects on the survival of the child, even without the child being infected with HIV, with uninfected children born from HIV positive mothers having a high probability of being orphaned and being more susceptible to child mortality than those who grow under their own mother's care (Goldberg, and Short., 2016). The death of a mother in many SSA communities potentially results in exploitation of the children by some communities, a lack of support and affection, poverty or even playing a parental role at a young age (Chola, Michalow, Tugendhaft, and Hofman, 2015).

This study also singled out diahorrea as the cause of under-five mortality. This corroborates with several studies which pinpoints diahorrea as one of the top killers of children. Latest World Health Organisation statistics suggests that diarrhea kills 2,195 children every day more than AIDS, malaria, and measles combined and diarrheal diseases account for 1 in 9 child deaths worldwide, making diarrhea the second leading cause of death among children under the age of five (Liu et al., 2016). The problem is exercabated by the fact that the diarrhea is linked to HIV. It is argued that for children with HIV, diarrhea is even more deadly; the death rate for these children is 11 times higher than the rate for children without HIV (Tambe et al., 2015).

Diarrhoea is one of the leading causes of morbidity and mortality in under-five children in South Africa, however the true burden of childhood diarrhoea is not accurately known (Chola et al., 2015). Official data from Statistics South Africa estimate that diarrhoea accounts for approximately 20% of under-five deaths (Statistics South Africa, 2012).The 2010 General Household Survey (GHS), a nationally representative inquiry into the livelihood of South Africans, showed that there were over 60,000 cases of childhood diarrhoea per month and approximately 9,000 child diarrhoeal deaths in the same year (StatsSA, 2012). Diarrhoea is closely linked to socio-economic status and has the most adverse effects in South Africa's impoverished communities (Chola et al., 2015). South African children living in poverty are approximately ten times more likely to die from diarrhoea than their more privileged counterparts (Statistics South Africa, 2012). Poor nutritional status, poor environmental conditions, and illnesses such as HIV/AIDS make children more susceptible to severe diarrhoea and dehydration (UNICEF, 2012).

4.3.2 Theme 2: Maternal and perinatal health as a determinant of U5M.

This theme emerged from the data that reflected that bereaved mothers perceived their health conditions to be associated with the death of their children. The following two categories were identified from the theme: complications during pregnancy and complications during labor and delivery.

Table 4.2: Theme 2, categories and subcategories

Theme	Category	Subcategory
1.Maternal and perinatal health as a determinant of U5M	2.1. Complications during pregnancy	• Pain under stomach button during pregnancy • stomach cramps and stomach discomfort during pregnancy • Sickness during pregnancy • had headaches, felt very tired and vomiting. • High blood pressure • preterm labor and birth.
	2.2 Complications during labor and delivery	• Measurements for child still far and ways not open • Child got tired inside my stomach • Child released stools inside my stomach • Child hanged herself with intestine • Child not breathing well after birth

Category 2.1: Complications during pregnancy

During interviews bereaved mothers were asked the factors/circumstances that could have led to the death of their children. The findings of the study revealed that bereaved mothers reported their sickness during pregnancy and preterm birth complications to have been associated with the death of their children. The following were the ways in which their children were affected.

"…Yes, I had problems with my pregnancy at 6 months. It was in October 2014; I don't remember the date. I was taken to the hospital Gorge Mukhari. I felt pain in the stomach under the stomach button; I did not know what was happening. The doctor said they did not see any problem to the child and me. They did not understand what was causing the pain..."

"…No, it was just stomach cramps and stomach discomfort…"

"…The first two months of pregnancy I was very sick. I had headaches, felt very tired and vomiting. I was not aware that I was pregnant and end of the month I visited the clinic and they told me I am pregnant so the next month I went to book and started ANC, I started ANC services when I was 3 months pregnant…"

"…I never had high blood pressure before; it started when I got pregnant. I never noticed the symptoms. The doctor told me it was because of high blood; my blood pressure was very high…"

"…I had stomach cramps; I didn't think it was labor pains because I was only six months pregnant. When I got to the hospital I went into labor. My child was born premature at 6 months; the doctors said the chances of living were 50/50. The child died the following day..."

Data indicate that some bereaved mothers had sicknesses during their pregnancy that they think also contributed to the death of their children. The mothers had different symptoms including headaches, fatigue, vomiting and stomach pains. Another participant did not get any medical help at that time as her condition was not diagnosed, the doctor could not tell what was causing the pains. The other mother was sick for a while without seeking medical attention, she realised later that she was pregnant and HIV positive. Another participant went into premature labor; her baby was born premature and passed on.

Similar findings are reported in literature indicates that, complications in pregnancy are one of the leading causes of child mortality in developing countries (Pillay-van Wyk, Msemburi, Laubscher, Dorrington, Groenewald, Glass, Nojilana, Joubert, Matzopoulos, Prinsloo, and Nannan, 2016). Most of these complications develop during pregnancy and are preventable and treatable. The maternal factors have a great effect on neonatal health. It is considered as direct cause of neonatal mortality (Sutan, and Berkat, 2014). Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period. The major direct causes of maternal illnesses include postpartum haemorrhage, maternal infection such as malaria, high blood pressure, and obstructed labour (Sutan and Berkat, 2014). Excessive gestational weight gain is associated with the development of maternal hypertension and pre-eclampsia (Gaillard, 2015). Globally, approximately 10% of all pregnancies are complicated by hypertension, which is a major cause of both foetal and maternal morbidity and mortality (Mahizir, Briffa, Hryciw, Wadley, Moritz, and Wlodek, 2016). In South Africa, the latest Saving Mothers Report cited 622 maternal deaths related to hypertensive disorders, with 55.3% from eclampsia, 28.3% from pre-eclampsia and 6.1% associated with chronic hypertension (Pearson, Watson, Lambert, and Micklesfield, 2015). According to this report, deaths from hypertensive disorders of pregnancy remain the most common direct cause of maternal death (Pearson et al., 2015).

Impaired placental function is the main causal pathway proposed for stillbirths (Lawn, Blencowe, Waiswa, Amouzou, Mathers, Hogan, Flenady, Frøen, Qureshi, Calderwood, and Shiekh, 2016). The primary known risk factors of stillbirths are presence of hypertensive disorders during pregnancy, obstetric complications, infections, placental dysfunction, and congenital defects (Khanam, Ahmed, Creanga, Begum, Koffi, Mahmud, Rosen, and Baqui, 2017). Notably, many of these risk factors are also determinants of the main causes of neonatal deaths

Category 2:2: Complications during labor and delivery.

During interviews a bereaved mother talked about complications during labor and delivery which she thought led to the death of her child. The following was the ways in which her child was affected.

"…On the 31st of January 2015. I just felt pain and they took me to the hospital. When we arrived at the hospital, I seat for a long time without being attended while I was in pain. They only attended me for 5 minutes and told me that my measurements for the child are still far and the ways are not open. They returned me to the ward, I sat there. They called me again and put me in my own room. Later, they told me that my child is getting tired inside my stomach and I should be operated. When I looked in between my legs were green things and they told me that it is the child's stools. The child had released stools inside my stomach. They took me and prepared me to go to the operation room so that they would operate me and take out the child. They took out the child. When they were busy operating me, I heard the doctor talking to the nurses saying the child hanged herself with the intestine. After some hours another nurse came in and I requested my child. Then the nurse told me that your child is not breathing well. Then the nurse went away. After a few minutes the nurse came back again and told me that your child is not breathing she has passed away. That's all what they told me…"

Data indicate that the participant had complications during labor and delivery which led to the death of the child. She was attended late because her birth canal was not opening, her child was hanged by the umbilical cord and by the time she was operated the child had released stools in her womb. When the child was born, she had breathing problems and passed on.

According to UN (2015b), 24% of neonatal deaths worldwide are caused by complications during labor and delivery. WHO, (2018), also confirms that complications in child birth is one of the leading causes of child mortality in developing countries. These findings concur with the current study as the death of the child was due to complications experienced

during labor and delivery. Intra-partum complications can result in fatal outcomes if not managed appropriately. Complications range from prolonged labour and fetal distress, associated with maternal and fetal conditions such as pre-eclampsia, eclampsia, abnormal presentation and cord accidents (Chaibva, Olorunju, Nyadundu, and Beke, 2019). Each year, an estimated 2.9 million babies die during the neonatal period and another 2.6 million babies are stillborn around the world. About three-fourths of the neonatal deaths occur within the first week of life (Kerber, Mathai, Lewis, Flenady, Erwich, Segun, Aliganyira, Abdelmegeid, Allanson, Roos, and Rhoda, 2015).

4.3.3. Theme 3: Health care as a determinant of U5M.

This theme emerged from data that shows that bereaved mothers believe their ineffective use of ANC services and poor services from health practitioners contributed to the death of their children. Two categories were identified from this theme, Ineffective use of ANC services and poor service from health practitioners.

Table 4.3: Theme 3 categories and subcategories.

Themes	Categories	Subcategories
1. Health care as a determinant of U5M.	1. Ineffective use of ANC services	• Did not use pills given at ANC. • Started ANC when 3months pregnant. • Missed ANC appointment
	2.Poor service from health practitioners	• Delay in being attended • Scan not done • Child not admitted told to go back home • Child not given medication • HIV test not done.

Category 1: Ineffective use of ANC services.

During interviews bereaved mothers talked about how they used ANC services and how this could have contributed to the death of their children

"…Yes, but there were some pills which bored me, and I did not use them…"

"…I'm not sure but I think things would have been different if I took the medication because I don't know what caused the complications during labor and delivery. Though I think the delay made the situation worse..."

"…I started ANC services when I was 3 months pregnant. They tested HIV and found that I am positive. After 3 months they tested, and I was still positive that's what they said and when my child was born, they said she was also HIV positive..."

"…I only missed one ANC appointment, the previous month. I attended the other appointments; they did all the checks, and everything was fine. Even my blood pressure, they were checking my blood pressure and it was fine…"

Similar findings were reported in Kenya whereby pregnant women did not attend ANC services therefore nonattendance was associated with neonatal mortality (Arunda, Emmelin, and Asamoah, 2017). A study conducted in India have found significant negative association between frequency of antenatal visits and neonatal mortality (Ibrahim, Yorifuji, Tsuda, Kashima, and Doi, 2011). A community based cross-sectional study in Ethiopia shows that 42% of study participants made less than four visits to ANC clinics during pregnancy (Bayu, Adefris, Amano, and Abuhay ,2015). Similar findings were found in a study in Uganda (Kawungezi, Akiibua, Aleni, Chitayi, Niwaha, Kazibwe, Sunya, Mumbere, Mutesi, Tukei, and Kasangaki, 2015). In these studies, lack of correct and enough information about the importance of maternal health care and poor understanding of the risks, low level of education, rural residence, and low household income were all associated with poor ANC attendance. Arthur (2012) proposed that in the most remote rural areas disparities in health care still exist and are due to the

inaccessibility and unavailability of health facilities, human resources, and poor road infrastructure to facilitate utilisation of ANC.

Category 3.2: Poor service from health practitioners

Bereaved mothers talked about poor service they received from health practitioners and how that contributed to the death of their children. The following is how they were affected.

"…Yaaaa, sometimes I think if they had attended me earlier and done the operation earlier maybe the child was going to survive. Or if they had done a scan, they would see it earlier that the child hanged herself and do the operation quickly. I even think when they saw that the way for the child to come is not open, they should have decided just to operate since they still operated me at the end but it did not help the child was already tired…"

"…I took her to the clinic first time they turned us back home they did not admit her they only gave her cough syrup. I stayed two days we returned to the clinic and the child was transferred to the hospital. They did not explain anything, they gave the child coughing mixture and the second time they transferred her to Malamulele hospital. When we arrived at the hospital, she was admitted for 2 months and 2 weeks then they said she will be discharged the following day and she died…"

"…Yes, I took the child for immunisation, he was due to have his immunisation for 3,5 months. They immunised the child, after immunisation I requested the nurse to check the child. The nurse denied saying the child is still young to be taking medication. She said go to the phamarcy and tell them you need panado. In that panado go and add little water, give the child and give the child warm water…"

"…mmhh they did not test his blood to see what the problem of his sickness was. Even though it's been years I remember they never tested his blood. Ehhh even me I was not tested by then because I was not aware that I am HIV positive…"

"…I went to the clinic, but they said they did not see anything. They didn't treat the child and they did not even give him medication. That was my main reason for taking the child to the clinic, but they turned me back. They said they don't understand the type of medication the child is supposed to get…"

"…When I was pregnant, they did not give me anything they just gave me those pills for pregnant women..."

"…No, I didn't. I didn't see the use of going back to the clinic because when I went there they never checked the child and told me that the child was too young to take medicine, so I was just giving the child the panado they told me to buy…"

This is in line with some of the studies conducted in the developing nations. About half of women and their babies in Sub Saharan Africa do not receive skilled care during pregnancy, childbirth and the postnatal period because of the attitude of the health practitioners (Tekelab, Chojenta, Smith, and Loxton, 2019). Findings from countries in Africa, Asia, and South America highlight insensitivity, rudeness, humiliation, neglect, abuse, and even physical violence by health centre staff as key factors in limiting women's accessing of antenatal care (Finlayson and Downe, 2013). Similar findings were observed in Bangladesh, Yemen, Nigeria and other African countries where underutilization of maternal and child services was attributed to the poor behavior of staff and preference for a more friendly atmosphere. The provision of adequate numbers of properly trained health workers at well-equipped health facilities is essential, and if implemented will improve use of available services and contribute to reduction in maternal and child mortality rates (Agunwa et al., 2017).

4.3.4 Theme 4: Cultural factors as a determinant of U5M.

This theme emerged from the data that reflected that bereaved mothers perceive cultural factors to be associated with the death of their children. The following categories were

identified from the theme. Cultural beliefs and practices and poor service from traditional healers.

Table 4.5: Theme 4, categories and subcategories

Themes	Categories	Subcategories.
1.Cultural factors as a determinant of U5M	1. Cultural beliefs and practices	• Child had ngoma • Child and mum had rigoni • Child had chikosini • Took child to hospital and traditional healers. • Used both traditional and modern medicine.
	2.Poor service from traditional healers.	• Medicine given was very dry and tasteless • Delay in being assisted • Traditional healer failed to assist the child.

Category 1: Cultural beliefs and practices

During interviews some bereaved mothers indicated how their cultural beliefs and practices contributed to the death of their children. Their cultural beliefs influence their practices and the following is how their children were affected.

"…*We went back to the clinic again and came back. So, the last time when the child returned from the hospital when we looked at the child the child wasn't looking better. So, we looked for traditional medicine. We gave the child to drink. After some time, it didn't help. It looked like it was getting worse until the child passed away. We tried those things thinking it was something people talk about which appear on upper back of the neck (chikosini). We were just wondering we were not sure. It's just that where there is sickness*

you go everywhere. You go to the doctors, sangoma, prophet. So, all of those things you mix ..."

"*…The child was sick, I don't know the type of the sickness. I took him to the hospital and to the traditional healers because others were saying its ngoma. At the end I became aware that the child was HIV positive…"*

"*…The first one of four months was sick, he had wounds on his throat and cracked mouth. When I seek assistance, the traditional healers said the child was attacked by rigoni, but they failed to assist the child and he died. The other one got wounds in the mouth; the child had just started walking but ended up dying…"*

"…It is our cultural practice that after birth a child should tusiwa. The child is given traditional medicine to drink to make him strong and protect him from catching diseases. The other (miri) medicines/herbs is put in the child's head, they cut the child in the head with a razor and rub in some traditional medicine..."

"…Yes, and ngoma as well the child had two ngoma and they were not beating properly. So, I think rigoni and ngoma caused the child to be sick then he died..."

"…Those who know they say after realizing the child has two ngoma I was supposed to be referred to traditional healers who are experts in infants conditions/healing infants. To reduce the size of ngoma, they cut on it with razor and put traditional medicine so that it beats properly like (b aba ba ba ba slowly -demonstrating with hand) but it was fast like ta ta ta ta ta ta – (demonstrating with her hand), they say the child was supposed to get wet medicine as they will be still strong than dry medicine and that medicine for applying on ngoma the traditional healer did not have it and that which reduce the size of ngoma should be there and they did not have them as well…"

"…Rigoni, it was removed that Friday. They cut a growth from (demonstrating by pointing at her private parts. It had already caused damage when they cut it off. I stayed a long period of 3 months. I had already noticed because a child with rigoni does not face you directly. He avoids looking at the mother and I saw it that it was rigoni. The child will be

doing like ……. (demonstrating by shaking her head showing that the baby will not be able to hold his head steady). It has been developing on me, but it had never killed any of my children before this one. When you have rigoni you can feel it, it will be itching. I just feel itching (pointing at her private parts). I had gone to the traditional healers previously and told them that rigoni is growing and they cut off, but I did not get a perfect person to remove it. But after the death of this child I never felt it again…"

Literature shows that some cultural practices, beliefs and norms are associated with U5M. Many cultural practices require introducing non-breast milk substances into infant diets before 6 months of age (Muchacha and Mthetwa, 2015; Premji, Khowaja, Meherali, and Forgeron,2014; Undelikwo and Enang, 2018). A study conducted in Pakistan to ascertain socio cultural influences on infant's diet observed that although most traditional fluids and semi-solids ingested by babies appeared to be in very small quantities, these feedings may still displace some milk in an infant's diet. Displacing breast milk with other substances has been associated with reduced duration of breastfeeding and more extensive supplementation and places infants at higher risk for infection and diarrhoea (Premji et al., 2014). Similar findings were reported in Zimbabwe suggests that demands that traditional medicine too displaces breastfeeding. According to this culture a ritual must be performed to babies to try and avert death caused by the condition that culminates in the subsiding of the fontanel in babies, mainly because of severe dehydration (a condition known as nhova in the vernacular). This practice is also common in Kenya, where infants are given various herbs to treat the condition known in Kenya as ndebele. (Muchacha and Mthetwa, 2015).

Undelikwo and Enang, (2018) explained that infant mortality due to food factors is because of the low and inferior status of women and practices associated with childbirth, the breast-feeding and weaning practices. In some communities, infants are usually deprived of colostrum due to delay in initiating breastfeeding, which is considered to enrich infants. In the traditional society of Cross River State, women are advised to extract out the first part of milk (that looks yellowish), which is colostrum on the belief that it is not

good for the child. The NDHS (2013:181) stipulates “colostrum is highly nutritious and contains antibodies that provide natural immunity to the infant. It is recommended that children be feed colostrum immediately after birth (within one hour) and that they continue to be exclusively breast fed even if the regular breast milk has not yet started to flow.” Pre-lactation beverages are administered without hygienic practices thereby exposing the children to infections.

In an African culture older person are regarded as fountains of knowledge and younger persons tap knowledge from them. Most of the advice that came from the mothers-in-law discouraged EBF in favour of mixed infant feeding practices. The mother-in-law is usually powerful and influential in major decisions concerning the behaviour and conduct of her daughter-in-law (Muchacha and Mthetwa, 2015). This traditional practice militates against the core tenets of exclusive breast feeding that prohibit the intake of any solids, let alone medicine unless prescribed by a qualified medical practitioner hence lead to child mortality.

Furthermore, developing countries are rich with cultural practice for healing of diseases and care of mothers and their newborns (Sutan, and Berkat, 2014). In Indonesia a mother who has just delivered her baby is considered as entering ‘cold’ period and she is vulnerable to infections and exposed to diseases. The mother strongly needs to have adequate rest after delivery and early clinic appointment given is commonly not routinely followed. This may lead to infant mortality. Premji et al (2014) observes in their study in Pakistan observes cultural practice that can lead to infant mortality. For instance, in Pakistan or Asia cultural practices designed to protect a baby’s health, such as applying surma onto baby’s eyes, treating jaundice with sun exposure and use of breast milk to treat infections in the nose and eyes possibly put infant health at increased risk (Premji et al., 2014).

Category 2: Poor service from traditional healers.

Bereaved mothers talked about poor service they received from traditional healers and how that contributed to the death of their children. The following is how they were affected.

"…The first one of four months was sick, he had wounds on his throat and cracked mouth. When I seek assistance, the traditional healers said the child was attacked by rigoni, but they failed to assist the child and he died. The other one got wounds in the mouth; the child had just started walking but ended up dying..."

"…The traditional healer in Venda told us that the Shangaan traditional healer who tusa the child did not attend the child properly and could not see rigoni in the mother…"

"…I took him to the hospital and to the traditional healers because others were saying its ngoma. At the end I became aware that the child was HIV positive…"

"…The traditional healers also didn't attend the child's ngoma properly during utusa. The child also had 2 ngoma which were not beating properly and were going down and the traditional healers also didn't have the right medication for this condition and to help reduce the size of ngoma. All these problems caused the child to be sick, have problems going to the toilet and eventually die..."

"…Yes, I think if the child was tusa by someone who know he couldn't have died because the problems were going to be identified earlier and the child was going to be given the correct medicine..."

"…Ahhh i can't really say this caused the death of the child because we were told different things. The child was sick for a week. I think it was a combination of different things, I had rigoni and I could feel the signs and the child had a sign of rigoni in his head. The person who tusa him did not check that. She was supposed to see it and remove it. It was left and grew and when they found it, it was very big and had caused damage to the child..."

Data also indicate mothers' dissatisfaction with the traditional healers who assisted them indicating some traditional healers did not have the proper quality medicine, were not

skilled enough to assist them, delays in being assisted and that they were given different diagnoses which they found confusing and at the end they couldn't tell what was wrong with the child. As indicated above, it can be noted that cultural practices, beliefs and norms are associated with U5M. Some cultural beliefs negatively influence the use of ANC services and health services by mothers leading to disease progression and U5M.

Majority of the people in most developing nations of the world are superstitious and traditionally oriented. Happenings to them and around them are usually attributed to the operation and mechanization of witches and wizards and also to the operation of the gods and this invariably influences the utilization of orthodox health facilities which has led to an increase in infant mortality since diseases are not treated but given traditional interpretation (Undelikwo and Enang, 2018).

Traditional health practitioners (THPs) play a vital role in the health care of the majority of the South African population and elsewhere on the African continent (Zuma, Wight, Rochat, and Moshabela, 2016). In sub-Saharan Africa, THPs' roles are constantly met with positive and negative criticism (Zuma et al., 2016). The criticism emanates from the fact that traditional healers claim to possess cures for various terminal ailments, among them HIV/AIDS. South Africa leads continental efforts to bring traditional healers into a legal framework. In early 2005, parliament approved a law to recognize the country's estimated 200,000 healers as health-service providers. Those registered would, for example, be allowed to prescribe sick leave and offer treatment for numerous conditions (Street, 2016).

4.4 Summary of the chapter

This chapter analysed the data collected from mothers who lost children under five years of age through death, who are residents of Mhinga, and the findings were discussed with literature control. The following chapter will present the summary, conclusion and recommendations.

CHAPTER 5

SUMMARY, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The previous chapter analysed the data collected from mothers who lost children under five years of age through death, themes, categories and subcategories that emerged during data analysis; as well as the sample description and demographic information of participants. This chapter presents the summary of the findings of the study, limitation of the study, conclusions and recommendations based on the data that were analysed in the previous chapter.

5.2. Summary of the study

This study is evaluated according to the purpose and objectives, as set in chapter 1. The study was qualitative in nature. The purpose of the study was to explore the determinants of under-five mortality in Mhinga Village, Vhembe District, South Africa. The purpose of the study was achieved through in-depth individual interviews which were conducted with the participants. The interviews were guided by one open-ended question, *What are the factors/circumstances that led to the death of your child.* The population consisted of mothers who lost children under five years of age through death, who are residents of Mhinga. The study used snowball sampling method to select the mothers because it is difficult to locate the participants. The study involved 7 mothers. Semi-structured interviews were used to collect data from participants and data were analysed using the thematic analytical approach.

The objectives of the study were as follows:

- To identify the determinants of U5M in Mhinga
- To describe the determinants of U5M in Mhinga.

- To identify the causes of U5M in Mhinga.

5.2.1 Theme 1: Disease and infections as a cause of U5M.

This theme had two categories namely symptoms and disease. Bereaved mothers described different symptoms which were associated with the conditions or sicknesses that led to the death of their under-fives. Some mothers indicated that specific diseases that caused the death of their under-fives. Diseases mentioned include HIV/AIDS, diarrhoea and breathing problems/birth asphyxia. The findings of the study review that certain diseases and infections were the cause of death associated with U5M in Mhinga.

5.2.2 Theme 2: Maternal and perinatal health as determinants of U5M

This theme had two categories namely complications during pregnancy and complications during labor and delivery. Bereaved mothers reported their sickness during pregnancy to have been associated with the death of their children. Two mothers were HIV positive and their children were born HIV positive which caused their death. Another mother developed high blood pressure during pregnancy, went into preterm labour and the child died just after birth. One Bereaved mother talked about complications during labor and delivery which led to the death of her child. The mother experienced complications during labor and delivery which led to the child experiencing breathing problems and death of the child. From what was described it was understood that sickness or complications experienced by a pregnant mother affect the baby leading to U5M. The findings reveal that maternal and perinatal health is a determinant associated with U5M in Mhinga.

5.2.3 Theme 3: Health care as a determinant of U5M.

This theme had two categories namely ineffective use of ANC services and poor services from health practitioners. Bereaved mothers believe their ineffective use of ANC services and poor services from health practitioners contributed to the death of their children. During interviews bereaved mothers talked about how they used ANC services delay is using ANC services, missing ANC appointments and not taking the medication given at ANC. Bereaved mothers talked about poor service they received from health practitioners and how that contributed to the death of their children. Mothers talked about delays in being attended, delays in making decisions, being denied service and no diagnosis given for their children's conditions. In some cases, mothers were told to go back home, and their children conditions got worse. It was noted that mothers felt discouraged to go back to the clinic/ hospital and because they were not assisted plus dissatisfaction with service mothers had to go to traditional healers for assistance. The findings reveal that health care is a determinant of U5M in Mhinga.

5.2.4 Theme 4: Cultural factors as determinants of U5M.

This theme had two categories namely cultural beliefs and practices. The results of the study show majority of the mothers took their children to traditional healers to be treated and then to the hospital if there is no change while others started with the hospital then to the traditional healers, mixing both traditional and hospital medicine. Some of the mothers were told the child had rigoni or ngoma then later realised the child was HIV positive while they had been giving traditional medicine. It can be noted that their cultural practices, beliefs and norms negatively influence the use of ANC services and health services by mothers leading to disease progression and U5M. The findings reveal cultural factors are a determinant associated with U5M in Mhinga.

5.3 Recommendations

5.3.1 Recommendations for practice

Based on the findings of the study, it is recommended that, efforts should be made to improve the quality of care to pregnant mothers and under-fives to encourage use of ANC and health services. Skilled and adequate health workers should be provided to offer ANC and health care services. In addition, efforts should be made to communicate the importance of accessing ANC at early stages of pregnancy, attending all ANC appointments and using medication given at ANC. This can be done through health education workshops and programmes in all communities, so women are empowered to utilise health services and ANC services. Health and ANC services to identify the reason for delayed health care seeking -the role of cultural factors, improve health seeking behaviour, improve parental recognition of common symptoms and signs of ill health and HIV/AIDS to promote early diagnosis and use of health services.

5.3.2 Recommendations for future studies

Based on the findings of this study, the study recommends that a study be conducted on the factors that affect the utilisation of health and ANC services and strategies to promote the use of health and ANC services in Mhinga. The study further recommends that a study be conducted on strategies to reduce U5M in Mhinga.

5.4 Limitation of the study

This was a qualitative study, its results, therefore, cannot be easily generalised to the general study population. This is because the study was only limited to mothers who lost children under five years of age through death, who are residents of Mhinga.

5.5. Conclusion of the study.

The literature and empirical findings from this study revealed that under five mortality is a challenge in Mhinga village and beyond. Furthermore, the study concluded that under five mortality in Mhinga village is caused by diseases and complications during pregnancy and birth. The findings, showed that, maternal and perinatal health, health care and cultural factors as determinant of U5M in Mhinga village.

REFERENCES

Abhulimhen-Iyoha, B.I., & Israel-Aina, Y.T. (2014). Pattern of Accidental Childhood Poisoning at the Children Emergency Room of the University of Benin Teaching Hospital, Benin City, Nigeria. *West African journal of medicine*, *35*(2), 85-89.

Adedini, S.A. (2014). Contextual determinants of infant and child mortality in Nigeria. *Unpublished doctoral thesis*. Johannesburg: University of the Witwatersrand.

Adedini, S.A., Odimegwu, C., Imasiku, E.N., Ononokpono, D.N., & Ibisomi, L. (2015). Regional variations in infant and child mortality in Nigeria: a multilevel analysis. *Journal of biosocial science*, *47(2),*165-187.

Adepoju, A.O. (2015). Differential pattern in child mortality rate in rural Nigeria. Annual Research and Review in Biology, 7(5), 309-317.

Adepoju, A.O., Akanni, O., & Falusi, A.O. (2015). Determinants of child mortality in rural Nigeria. *Cancer Biology*, *2(2)*, 7-14.

Agunwa, C.C., Obi, I.E., Ndu, A.C., Omotowo, I.B., Idoko, C.A., Umeobieri, A.K., & Aniwada, E.C. (2017). Determinants of patterns of maternal and child health service utilization in a rural community in south eastern Nigeria. *BMC health services research*, *17(1)*, 715.

Al Kibria, G.M., Burrowes, V., Choudhury, A., Sharmeen, A., Ghosh, S., Mahmud, A., & Angela, K.C. (2018). Determinants of early neonatal mortality in Afghanistan: an analysis of the Demographic and Health Survey 2015. *Globalization and health*, *14*(1), 40-47.

Al-Waeel, F.S.M. (2015). Determinants of Maternal Mortality in Yemen. *Unpublished Master thesis*. Amsterdam: Free university of Amsterdam.

Anney, V. (2014). Ensuring the Quality of the Findings of Qualitative Research: Looking at Trustworthiness Criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*, *5(2*), 272-281.

Arthur, E. (2012). Wealth and antenatal care use: implications for maternal health care utilisation in Ghana. *Health economics review*, *2(1),*14.

Arunda, M., Emmelin, A., & Asamoah, B.O. (2017). Effectiveness of antenatal care services in reducing neonatal mortality in Kenya: analysis of national survey data. *Global health action*, *10(1),* 1654-9880.

Bamford, L.J., McKerrow, N.H., Barron, P., & Aung, Y. (2018). Child mortality in South Africa: Fewer deaths, but better data are needed. *South African Medical Journal*, *108(3),* 25-32.

Bayu, H., Adefris, M., Amano, A., & Abuhay, M. (2015). Pregnant women's preference and factors associated with institutional delivery service utilization in Debra Markos Town, North West Ethiopia: a community-based follow up study. *BMC pregnancy and childbirth*, *15(1*),15.

Berelie, Y., Yismaw, L., Tesfa, E. & Alene, M. (2019). Risk factors for under-five mortality in Ethiopia: Evidence from the 2016 Ethiopian Demographic and Health Survey. *South African Journal of Child Health*, *13(3)*,137-140.

Boco, A.G. (2015). Assessing sex differentials in under-five mortality in sub-Saharan Africa: A cross-national comparative analysis. *Canadian Studies in Population 41(3-4)*, 49-87.

Bongaarts, J., Blanc, A.K., & McCarthy, K.J. (2019). The links between women's employment and children at home: Variations in low-and middle-income countries by world region. *Population studies*, *73(2*),149-163.

Bradshaw, D., Wyk, P., Somdyala, N., & Cerf, M. (2016). *National Burden of disease study for South Africa: Burden of disease research unit.* South African Medical Research Council. Available at https://ping.org.za/committee-meeting/22198.

Bryce, J., Amouzou, A., Victora, C.G., Jones, G., Silva, R., Hill, K., Black, R.E., & RMM Working Group (2016). “Real-Time” Monitoring of Under-Five Mortality: Lessons for Strengthened Vital Statistics Systems. *PLoS medicine*, *13(1),*150-160.

Cha, S. (2017). The impact of the worldwide Millennium Development Goals campaign on maternal and under-five child mortality reduction: ‘Where did the worldwide campaign work most effectively?’. *Global health action*, *10(1),*1-15

Chaibva, B.V., Olorunju, S., Nyadundu, S., & Beke, A. (2019). Adverse pregnancy outcomes, ‘stillbirths and early neonatal deaths’ in Mutare district, Zimbabwe (2014): a descriptive study. *BMC pregnancy and childbirth*, *19*(1),1-7

Chikovore, E.S. (2013). *A Review of Childhood Mortality Determinants in Zimbabwe During the Economic Crisis Using Data from the Zimbabwe Demographic and Health Survey, 2010-2011*. Unpublished Doctoral dissertation. Durban: University of KwaZulu-Natal.

Chola, L., Michalow, J., Tugendhaft, A., & Hofman, K. (2015). Reducing diarrhoea deaths in South Africa: costs and effects of scaling up essential interventions to prevent and treat diarrhoea in under-five children. *BMC Public Health*, *15(1),*1-10

Chowdhury, A.H. (2013). Determinants of under-five mortality in Bangladesh. *Open Journal of Statistics*, *3(03*), 213-220.

Clark, S., & Hamplová, D. (2013). The impact of mother’s marital status on child mortality in sub-Saharan Africa: an analysis of birth and marital histories. In *Sixth African Population Conference*.

Committee on Morbidity and Mortality in Children Under 5 years. (2014). 2nd Triennial Report. Available at:www.kznhealth.gov.za/.../2nd_CoMMiC_Trennial_Report_Abridged pdf. Accessed on 18/03/2016.

Conombo, B., & Sawadogo, J. (2017). Risk Factors of Infant and Under-Five Mortality in Burkina Faso. *Journal of Social demographics*, *7(13*),1-7

Creswell, J.W. (2009). *Research design: Qualitative and mixed methods approaches*. London and Thousand Oaks: Sage Publications.

Dube, Z.B. (2012). *The Relationship Between Mothers' Maternal Age and Infant Mortality in Zimbabwe. Unpublished Doctoral dissertation*. Johannesburg, University of the Witwatersrand.

Ettarh, R.R., & Kimani, J. (2012). Determinants of under-five mortality in rural and urban Kenya. *Rural and Remote Health*, *12(1),*1-9

Ezeh, O.K., Agho, K.E., Dibley, M.J., Hall, J.J., & Page, A.N. (2015). Risk factors for post neonatal, infant, child and under-5 mortality in Nigeria: a pooled cross-sectional analysis. *BMJ open*, *5(3*),1-10

Fall, C. H., Sachdev, H.S., Osmond, C., Restrepo-Mendez, M.C., Victora, C., & Martorell, R. (2015). Association between maternal age at childbirth and child and adult outcomes in the offspring: A prospective study in five low-income and middle-income countries. *The Lancet. Global Health, 3(7*),1-8.

Fayehun, O.A. (2010). A review of childhood mortality data from 1990-2008. *African Population Studies*, *27(1*),1-9

Finlayson, K., & Downe, S. (2013). Why do women not use antenatal services in low-and middle-income countries? A meta-synthesis of qualitative studies. *PLoS medicine*, *10(1*),1-9

Fotso, J.C., Cleland, J., Mberu, B., Mutua, M., & Elungata, P. (2013). Birth spacing and child mortality: an analysis of prospective data from the Nairobi urban health and demographic surveillance system. *Journal of biosocial science*, *45(6*), 779-798.

Gaillard, R. (2015). Maternal obesity during pregnancy and cardiovascular development and disease in the offspring. *European Journal of Epidemiology*, *30(11*),1141-1152.

Gebretsadik, S., & Gabreyohannes, E. (2016). Determinants of under-five mortality in high mortality regions of Ethiopia: an analysis of the 2011 Ethiopia demographic and health survey data. *International Journal of Population Research*, *30(11*),1-9

Geneti, K.T., & Deressa, T.K. (2014). Correlates of Under Five Child Mortality in Ethiopia: A Logistic Regression Analysis. *Advances and Applications in Statistics*, *39(1*), 61-70.

Goldberg, R.E., & Short, S.E. (2016). What do we know about children living with HIV-infected or AIDS-ill adults in Sub-Saharan Africa? A systematic review of the literature. *AIDS care*, *28(2*),130-141.

Grepin, K.A., & Bharadwaj, P. (2015). Maternal Education and Child Mortality in Zimbabwe*. Elsevier*, Vol. 44, 95-117

Grove, S.K., Burns, N., & Gray, J.R. (2015). *The Practical of Nursing Research* (8th ed.). Missouri: Mosby Elsevier Inc.

Günes, P.M. (2015). "The Role of Maternal Education in Child Health: Evidence from a Compulsory Schooling Law". *Elsevier*, *47(2*),1-16.

Harabo, T.E.A.B. (2017). Determinants of Infant and Under-Five Mortality in White Nile State*. Unpublished Doctoral dissertation*. Sudan: University of Gezira.

Harrison, D. (2009). An overview of health and health care in South Africa: Overview 1994-2010pdf. Available at: www.google.co.za/url?q=http//ftp.bhfglobal.com. Accessed on 18/03/2016

Ibrahim, J., Yorifuji, T., Tsuda, T., Kashima, S., & Doi, H. (2011). Frequency of antenatal care visits and neonatal mortality in Indonesia. *Journal of tropical pediatrics*, *58*(3),184-188.

Johri, M., Subramanian, S.V., Sylvestre, M.P., Dudeja, S., Chandra, D., Koné, G.K., Sharma, J.K., & Pahwa, S. (2015). Association between maternal health literacy and child

vaccination in India: a cross-sectional study. *Journal Epidemiol Community Health*, *69(9*), 849-857.

Karmaker, S.C., Lahiry, S., Roy, D.C., & Singha, B. (2014). Determinants of infant and child mortality in Bangladesh: time trends and comparisons across South Asia. *Bangladesh Journal of Medical Science*, *13(4),* 431-437.

Kawungezi, P.C., Akiibua, D., Aleni, C., Chitayi, M., Niwaha, A., Kazibwe, A., Sunya, E., Mumbere, E.W., Mutesi, C., Tukei, C., & Kasangaki, A. (2015). Attendance and utilization of antenatal care (ANC) services: multi-center study in upcountry areas of Uganda. *Open journal of preventive medicine*, *5(3),*132-136.

Kerber, K.J., Mathai, M., Lewis, G., Flenady, V., Erwich, J.J.H., Segun, T., Aliganyira, P., Abdelmegeid, A., Allanson, E., Roos, N., & Rhoda, N. (2015). Counting every stillbirth and neonatal death through mortality audit to improve quality of care for every pregnant woman and her baby. *BMC pregnancy and childbirth*, *15(2*),1-9.

Khan, J.R., & Awan, N. (2017). A comprehensive analysis on child mortality and its determinants in Bangladesh using frailty models. *Archives of Public Health*, *75(1*), 50-58.

Khan, R.E.A., Bari, K.M., & Raza, M.A. (2018). Socioeconomic determinants of child mortality: Evidence from Pakistan Demographic and Health Survey. *Business Review*, *2(13*), 34-50.

Khanam, R., Ahmed, S., Creanga, A.A., Begum, N., Koffi, A.K., Mahmud, A., Rosen, H., & Baqui, A.H. (2017). Antepartum complications and perinatal mortality in rural Bangladesh. *BMC pregnancy and childbirth*, *17(1*), 81-89.

Kibel, M., Saloojee, H., & Westwood, T. (2012). *Child health for all: A manual for Southern Africa* (5th ed). Cape Town: Oxford University Press.

Kimani-Murage, E.W., Fotso, J.C., Egondi, T., Abuya, B., Elungata, P., Ziraba, A.K., Kabiru, C.W., & Madise, N. (2014). Trends in childhood mortality in Kenya: the urban advantage has seemingly been wiped out. *Health and place*, *29*, 95-103.

Kozuki, N., & Walker, N. (2013). Exploring the association between short/long preceding birth intervals and child mortality: using reference birth interval children of the same mother as comparison. *BMC public health*, *13(3*),1-10.

Kropiwiec, M.V., Franco, S.C., & Amaral, A.R.D. (2017). Factors associated with infant mortality in a Brazilian city with high human development index. *Revista Paulista de Pediatria*, *35(4*), 391-398.

Kumar, R. (2019). Research methodology: A step-by-step guide for beginners. Sage Publications Limited

Kuntla, S., Goli, S., & Jain, K. (2014). Explaining sex differentials in child mortality in India: trends and determinants. *International Journal of Population Research*, 2014*(3*),1-8.

Lawn, J.E., Blencowe, H., Waiswa, P., Amouzou, A., Mathers, C., Hogan, D., Flenady, V., Frøen, J.F., Qureshi, Z.U., Calderwood, C., & Shiekh, S. (2016). Stillbirths: rates, risk factors, and acceleration towards 2030. *The Lancet*, *387(10018*), 587-603.

Li, C., Yan, H., Zeng, L., Dibley, M.J., & Wang, D. (2015). Predictors for neonatal death in the rural areas of Shaanxi Province of Northwestern China: a cross-sectional study. *BMC public health*, *15(1*),1-9.

Li, Y., Zhang, Y., Fang, S., Liu, S., Liu, X., Li, M., Liang, H., & Fu, H. (2017). Analysis of inequality in maternal and child health outcomes and mortality from 2000 to 2013 in China. *International journal for equity in health*, *16(1*), 66.

Liang, S., Macinko, J., Yue, D., & Meng, Q. (2019). The impact of the health care workforce on under-five mortality in rural China. *Human resources for health*, *17(1*),10-21.

Lin, M.J., Liu, J.T., & Qian, N. (2014). More missing women, fewer dying girls: The impact of sex-selective abortion on sex at birth and relative female mortality in Taiwan. *Journal of the European Economic Association*, *12(4*),899-926.

Liu, L., Oza, S., Hogan, D., Chu, Y., Perin, J., Zhu, J., Lawn, J.E., Cousens, S., Mathers, C., & Black, R.E. (2016). Global, regional, and national causes of under-5 mortality in 2000–15: an updated systematic analysis with implications for the Sustainable Development Goals. *The Lancet*, *388(10063*), 3027-3035.

LoBiondo-Wood, G., & Haber, J. (2017). *Nursing research-E-book: methods and critical appraisal for evidence-based practice*. Elsevier Health Sciences.

LoBiondo-Wood, G., Haber, J., Berry, C., & Yost, J. (2013). *Study Guide for Nursing Research-E-Book: Methods and Critical Appraisal for Evidence-Based Practice*. Elsevier Health Sciences.

Lugangira, K., & Kalokola, F. (2017). Morbidity and mortality of children aged 2–59 months admitted in the Tanzania Lake Zone's public hospitals: a cross-sectional study. *BMC research notes*, *10(1*), 502-510.

Mahizir, D., Briffa, J.F., Hryciw, D.H., Wadley, G.D., Moritz, K.M., & Wlodek, M.E. (2016). Maternal obesity in females born small: Pregnancy complications and offspring disease risk. *Molecular nutrition and food research*, *60(1*), 8-17.

Maluleke, T., & Chola, L. (2016). Millennium Development Goal 5: Improve maternal health 2015. *Statistics South Africa*.1, 76-83.

Mbugua, S., Musikoyo, E., Ndungi, F., Sang, R., Kamau-Mbuthia, E., & Ngotho, D. (2014). Determinants of diarrhea among young children under the age of five in Kenya, evidence from KDHS 2008-09. *African Population Studies*, *28*,1046-1056.

Moonasar, D., Nuthulaganti, T., Kruger, P.S., Mabuza, A., Rasiswi, E.S., Benson, F.G., & Maharaj, R. (2012). Malaria control in South Africa 2000–2010: beyond MDG6. *Malaria journal*, *11(1*), 1-7.

Morrow. S.L. (2005). Quality and trustworthiness in qualitative research in counselling psychology. *Journal of Counselling Psychology. 52(2*), 250-260.

Mosley, W.H., & Chen, L.C. (1984). An analytical framework for the study of child survival in developing countries. *Population and development review*, *10(0*), 25-45.

Muchacha, M., & Mthetwa, E. (2015). Beyond the bio-medical orthodoxies: Socio-economic and attitudinal impediments to exclusive breast feeding in rural Zimbabwe and possible roles of social workers and interventions to promote its uptake. *Social Work*, *51(1*), 63-79.

Muriithi, D.M., & Muriithi, D.K. (2015). Determination of infant and child mortality in Kenya using Coxproportional hazard model. *American Journal of Theoretical and Applied Statistics*, *4(5*), 404-413.

Mulaudzi, O. (2016). Map of Mhinga Village. Vhembe District Municipality GIS Section. Vhembe District: Thohoyandou.

Nandi, A., Hajizadeh, M., Harper, S., Koski, A., Strumpf, E.C., & Heymann, J. (2016). Increased duration of paid maternity leave lowers infant mortality in low-and middle-income countries: a quasi-experimental study. *PLoS medicine*, *13(3*),1-10.

Nannan,N., Dorrington,R.E., Laubscher,R., Zinyakatira,N., Prinsloo,M., Darikwa,T.B., Matzopoulos,R., & Bradshaw,D. (2012). *Under-5 mortality statistics in South Africa: Shedding some light on the trends and causes 1997-2007*. Cape Town: South African Medical Research Council.

Nannan, N.N., Groenewald, P., Pillay-van Wyk, V., Nicol, E., Msemburi, W., Dorrington, R.E., & Bradshaw, D. (2019). Child mortality trends and causes of death in South Africa, 1997-2012, and the importance of a national burden of disease study. *South African Medical Journal*, *109(7*), 480-485.

Nasejje, J.B., Mwambi, H.G., & Achia, T.N. (2015). Understanding the determinants of under-five child mortality in Uganda including the estimation of unobserved household and community effects using both frequentist and Bayesian survival analysis approaches. *BMC public health*, *15(1*), 1-10

National Population Commission (NPC) (Nigeria) and ORC Macro. 2013. Nigeria 2013 Demographic and Health Survey.

Neuman, L.W. (2014). *Social Research Methods* (7th ed). Los Angeles: Pearson International Edition.

Omolo, A.O. (2013). Identifying indicators of child mortality using factor analysis method: a case study in Abudwak district in central Somalia. *Unpublished Doctoral dissertation*. Kenya: University of Nairobi.

Oyefara, J.L. (2013). Maternal age at first birth and childhood mortality in Yoruba society: the case of Osun State, Nigeria. *Research on Humanities and Social Sciences*, *3(1*), 246-256.

Pearson, J.T., Watson, E.D., Lambert, E.V., & Micklesfield, L.K. (2015). The role of physical activity during pregnancy in determining maternal and foetal outcomes. *South African Journal of Sports Medicine*, *27(4*), 93-96.

Pillay-van Wyk, V., Msemburi, W., Laubscher, R., Dorrington, R.E., Groenewald, P., Glass, T., Nojilana, B., Joubert, J.D., Matzopoulos, R., Prinsloo, M., & Nannan, N. (2016). Mortality trends and differentials in South Africa from 1997 to 2012: second National Burden of Disease Study. *The Lancet Global Health*, *4(9*), 642-653.

Polit, D.F., & Beck, C.T. (2012). Ethics in nursing research. *Nursing Research Generating and Assessing Evidence for Nursing Practice. Ninth ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams and Wilkins*, (*1)*, 150-73.

Premji, S., Khowaja, S., Meherali, S., & Forgeron, R. (2014). Sociocultural influences on newborn health in the first 6 weeks of life: qualitative study in a fishing village in Karachi, Pakistan. *BMC pregnancy and childbirth*, *14(1*), 232.

Quansah, E., Ohene, L.A., Norman, L., Mireku, M.O., & Karikari, T.K. (2016). Social factors influencing child health in Ghana. *PLoS One*, *11(1*), 1-14.

Robinson, O.C. (2014). Sampling in interview-based qualitative research: A theoretical and practical guide. *Qualitative research in psychology*, *11(1*), 25-41.

Samuel, G.W. (2016). Underlying and Proximate Determinants of Under-five Mortality in Nigeria: Understanding the Pathways of Influence. *Unpublished Doctoral dissertation*. Ota: Covenant University.

Singh, R., & Tripathi, V. (2013). Maternal factors contributing to under-five mortality at birth order 1 to 5 in India: a comprehensive multivariate study. *Springer plus, 2(1*),1-12

Smith-Greenaway, E. (2013). Maternal reading skills and child mortality in Nigeria: a reassessment of why education matters. *Demography*, *50(5*), 1551-1561.

Soanes, C., & Stevenson, A. (2006). Concise Oxford English Dictionary (11th ed.), New York: Oxford University Press.

Statistics South Africa (2012). Levels and trends of morbidity and mortality among children aged under-five years in South Africa, 2006–2010. *Statistics South Africa*, (*1*), 40-55

Statistics South Africa. (2015). Millenium Development Goals Country Report. Available at:www. statssa.gov.za/MDG/MDG Country% Report Final30Sep2015.pdf. Accessed on 18/03/2016.

Statistics South Africa. (2017). Mortality and causes of death among children under-five years in South Africa, 2010 -2017. Statistics South Africa, Pretoria.

Street, R.A. (2016). Unpacking the new proposed regulations for South African traditional health practitioners. *SAMJ: South African Medical Journal*, *106(4*), 325-326.

Sutan, R., & Berkat, S. (2014). Does cultural practice affect neonatal survival-a case control study among low birth weight babies in Aceh Province, Indonesia. *BMC pregnancy and childbirth*, *14(1*), 342-348

Tambe, P., Sammons, H.M., & Choonara, I. (2015). Why do young children die in the UK? A comparison with Sweden. *Archives of disease in childhood*, *100(10*), 928-931.

Tekelab, T., Chojenta, C., Smith, R., & Loxton, D. (2019). The impact of antenatal care on neonatal mortality in sub-Saharan Africa: A systematic review and meta-analysis. *PloS one*, *14(9*), 1-10

Thiombiano, B.G., LeGrand, T.K., & Kobiané, J.F. (2013). Effects of parental union dissolution on child mortality and schooling in Burkina Faso. *Demographic Research*, *29*, 797-81

Tlou, B., Sartorius, B., & Tanser, F. (2018). Investigating risk factors for under-five mortality in an HIV hyper-endemic area of rural South Africa, from 2000-2014. *PloS one*, *13(11*),1-20

Undelikwo, V.A., & Enang, E.E. (2018). Cultural Practices and Infant Mortality in Cross River State, Nigeria: A Sociological Perspective. *Mediterranean Journal of Social Sciences*, *9(5*), 1-11

UNICEF. (2012*). measuring child poverty: New league tables of child poverty*. UNICEF

UNICEF. (2016). *for every child, end AIDS: Seventh stocktaking report, 2016*. UNICEF.

UNICEF. (2018). *for every child, end AIDS–seventh stocktaking report.* New York

UNICEF. (2019). *Levels and trends in child mortality 2019.* New York

United Nations (2009). United Nations Department of Public Information. *Millennium Development Goals Report 2009 (Includes the 2009 Progress Chart)*. United Nations Publications.

United Nations. (2015). *Sustainable Development goals, Transforming our world by 2030.* New York. United Nations

United Nations. (2015a). *Levels and trends in child mortality: Report 2015*. Available at: www.childmortality.org/.../IGME%20report%202015%20child% mortality. Accessed on 18/03/2016.

United Nations. (2015b). *The Millennium Development Goals Report*. New York. Available at: www.un.org/milleniumgoals/2015_MDG_Report/.../MDG%202015%asdf. Accessed on 18/03/2016.

United Nations. (2018). Levels and trends in child mortality: Report 2018. Available at: https://childmortality.org/files...GME%20Child%20MortalityReport%202018pdf. Accessed on 04/03/19.

United Nations Programme on HIV/AIDS (UNAIDS). (2017). *Ending AIDS: Progress towards the 90-90-90 targets*. Global AIDS update.

Vanker, A., Barnett, W., Nduru, P.M., Gie, R.P., Sly, P.D., & Zar, H.J. (2015). Home environment and indoor air pollution exposure in an African birth cohort study. *Science of the Total Environment*, *536*, 362-367.

Vogel, J.P., Chawanpaiboon, S., Moller, A.B., Watananirun, K., Bonet, M., & Lumbiganon, P. (2018). The global epidemiology of preterm birth. *Best practice and research Clinical obstetrics and gynecology*, *52*, 3-12.

Walker,C.L., Rudan,I., Liu,L., Nair,H., Theodoratou,E., Bhutta,Z., O'Brien,K.L., Campbell,H. & Black,R.E. (2013). Childhood Pneumonia and Diarrhoea 1: Global burden of childhood pneumonia and diarrhoea. *Lancet, 2013*, *381*,1405–16

Wang, Y., Li, X., Zhou, M., Luo, S., Liang, J., Liddell, C.A., Coates, M.M., Gao, Y., Wang, L., He, C., & Kang, C. (2016). Under-5 mortality in 2851 Chinese counties, 1996–2012: a subnational assessment of achieving MDG 4 goals in China. *The Lancet*, *387(10015*), 273-283.

Webster, M. (2010). *Learners' dictionary*. Available at: www.merriam-webster.com/dictionary. Accessed on 04/05/2016.

World Health Organisation. (2013). *Ending preventable deaths from pneumonia and diarhoea by 2025,* Geneva. Available at www.who.int/preventabledeaths. Accessed on 09/03/19.

World Health Organisation. (2015). *World malaria report 2015*, Geneva. Available at www.who.int/malaria/visual-refresh/en. Accessed on 09/03/19.

World Health Organization. (2016). *World health statistics 2016: monitoring health for the SDGs sustainable development goals*. World Health Organization.

World Health Organisation. (2017). *Causes of child mortality, 2017*. *Global Health Observatory (GHO) data. Mortality and global health estimates*. Available at https://www.who.int/child_health/children/ reducing mortality accessed on 09/10/19

World Health Organization. (2018). *Children: reducing mortality*. Available at https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality accessed on 09/03/19

World Health Organization. (2019). *World Health Organisation Report, Global health observatory* (GHO) data, 2019, available at http: //www.who.int/gho/child_health/mortality/mortality_under_five_text/en/ accessed on 09/12/19

World Health Statistics. (2015). *Health Related Millennium Development Goals*. Available at: www.who.int/gho/.../world_health_statistics/EN_WHS2015_Part1.pdf. Accessed 10/03/2016

Yaya, S., Bishwajit, G., Okonofua, F., & Uthman, O.A. (2018). Under five mortality patterns and associated maternal risk factors in sub-Saharan Africa: A multi-country analysis. *PloS one*, *13(10*), 1-10

Zewdie, S.A. (2014). Spatial analysis of child mortality in South Africa in relation to poverty and inequality: evidences from the 2011 census. *Unpublished Doctoral dissertation*. Cape town: University of Cape Town.

Zuma, T., Wight, D., Rochat, T., & Moshabela, M. (2016). The role of traditional health practitioners in Rural KwaZulu-Natal, South Africa: generic or mode specific? *BMC complementary and alternative medicine*, *16(1*),1-15

APPENDIX A: Ethical clearance

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Ms G Chifamba

Student No:
11576177

PROJECT TITLE: **The determinants of under-five mortality in a selected village in Vhembe District, South Africa.**

PROJECT NO: **SHS/17/PH/06/0505**

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Prof AK Tugli	University of Venda	Supervisor
Dr M Maluleke	University of Venda	Co- Supervisor
Ms G Chifamba	University of Venda	Investigator – Student

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: May 2017
Decision by Ethical Clearance Committee Granted
Signature of Chairperson of the Committee: .....
Name of the Chairperson of the Committee: Prof. G.E. Ekosse

UNIVERSITY OF VENDA
DIRECTOR
RESEARCH AND INNOVATION
2017 -05- 10
Private Bag X5050
Thohoyandou 0950

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

APPENDIX B: Approval letter (Limpopo provincial Department of Health)

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Stols M.L (015 293 6169) Ref:4/2/2

Chifamba G
Department of Public Health
University of Venda

Greetings,

RE: The determinants of under-five mortality in a selected village in Vhembe District, Limpopo Province, South Africa

The above matter refers.

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

Your cooperation will be highly appreciated.

Head of Department

13/07/2017
Date

18 College Street, Polokwane, 0700, Private Bag x9302, POLOLKWANE, 0700
Tel: (015) 293 6000, Fax: (015) 293 6211/20 Website: http/www.limpopo.gov.za
The heartland of Southern Africa – *development is about people*

APPENDIX C: Request to conduct research

University of Venda
P.O Box X5050
Thohoyandou 0950

20 April 2017

The Headman
Mhinga Village
Thulamela Municipality
South Africa

Dear Sir

RE: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH PROJECT IN MHINGA ON DETERMINANTS OF UNDER-FIVE MORTALITY.

I am a master's student at the University of Venda. In order to complete my degree, I am expected to conduct a research project of my choice.

In many rural areas there is high mortality of children under five years of age as compared to urban areas. According to literature, these differentials can be attributed to the disparities in favour of urban areas in the distribution of facilities necessary for maintaining adequate health. This study is therefore, aimed at **exploring the determinants of under-five mortality in Mhinga village, Vhembe District, South Africa**.

In-depth interviews will be used for data collection and the information gathered will be treated with utmost confidentiality. The summary of results will be made available to the community.

Therefore, I am asking for your permission to conduct the study.

I hope this study will help to identify the determinants of under-five mortality in Mhinga and suggest strategies to overcome them.

Your help in facilitating this research will be highly appreciated.

Yours faithfully

……

Grace Chifamba
Student
0761052563/ chifambag@yahoo.com

APPENDIX D: Approval letter from Mhinga headman

MHINGA TRADITIONAL AUTHORITY / COUNCIL

820 Mhinga Zone One
Mhinga, Malamulele District
Limpopo Province, South Africa
P.O.Box 2 Mhinga 0976

Cell No: +27 73 018 2610, +27 72 686 8824
Fax No: 086 560 6381
Email: mhingatc@gmail.com

05-05-2017

REQUEST FOR PERMISSION TO COLLECT INFORMATION FOR RESEARCH IN MHINGA TRADITIONAL COUNCIL

1. THE ABOVE MATTER REFERS.

2. KINDLY NOTE THAT YOU'RE PERMISSION TO CONDUCT RESEARCH FROM 05-05-2017 TILL DECEMBER 2017 HAS BEEN GRANTED

3. HOPING THAT THIS WILL REACH YOUR FAVOURABLE CONSIDERATION

SECRETARY .....

CHAIRPERSON.....

CELL NO: 0733781890

DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS & TRADITIONAL AFFAIRS
MHINGA
TRADITIONAL COUNCIL
2017 -05- 05
P.O.BOX 02 MHINGA
0976
VHEMBE DISTRICT SUPPORT CENTRE

APPENDIX E: Information sheet

My name is **GRACE CHIFAMBA**. I am a student at the University of Venda registered for the Master of Public Health degree (MPH). My research focuses on **the determinants of under-five mortality in a selected village in Vhembe District, South Africa.** I would like to request you to take part in this study. Without your participation this study cannot be successful.

Research data will be collected by the researcher. Before data collection the researcher will explain the purpose, the ethical principles to be adhered to and give the respondents the informed consent form, the researcher conduct interviews to those who meet the inclusion criteria. Data will be collected at a place convenient for the respondents.

The researcher will handle the gathered data in utmost confidentiality, meaning that no unauthorized people will handle the data in any way. The data will always be kept safe and will be discarded as soon as the study is complete. The researcher will use codes rather than participants' real names, when disseminating the results.

In this research project participation is free and voluntary. The participants are encouraged to withdraw from the project at any time should they feel uncomfortable or threatened in any way to continue participating in the study.

In this study the researcher will ensure that the benefits surpass the risks. The researcher will ensure that no physical, psychological or emotional harm is inflicted on the respondents during the study. Other possible dangers will be looked at and the researcher shall guard against them. In addition, in case the participant is harmed, the researcher will do follow up and refer the participant to appropriate health workers for treatment. The participant's positive response to participate in the study will enable the researcher to draw conclusions from the findings and be able to give recommendations that can be helpful to the villagers of Mhinga or Vhembe District as a whole.

APPENDIX F: Consent form

My name is **Grace Chifamba**. I am a Master's degree student at the University of Venda, registered for the Masters in Public Health degree (MPH). My research focuses on **the determinants of under-five mortality in a selected village in Vhembe District, South Africa**. I am inviting you to participate in this study. Please note that any information you will provide will be treated as confidential and therefore will not be disclosed to anyone without your consent. Note that your participation is voluntary, meaning to say you are free to pull out at any time should you feel uncomfortable while the study.

Signature of researcher……. Date…….

I ……... Have read and understood the contents and terms of this invitation to participate in this study. I hereby declare that I am voluntarily participating in this research.

Respondent signature……. Date…….

For more information contact Chifamba G (Researcher)-076 105 2563 or chifambag@yahoo.com

APPENDIX G: Interview guide

A. Demographic information.

1. How old are you?
2. Are you married?
3. Which academic qualifications do you have?
4. Are you working?
5. When child was born
6. Age when the child died
7. Gender of the child

B. Main Question.

- What are the factors/circumstances that led to the death of your child?
- What was the cause of death of the deceased child?

APPENDIX H : Transcript A

TRANSCRIBED DOCUMENT

Participant 2

R= Researcher

P= Participant

R: Hello

P: Hello, How are you

R: I am fine and how are you

P: I'm fine.

R: Thank you for honoring our appointment.

P: That's ok

R: Soo I had already introduced myself, that I m Grace Chifamba. I am from the University of Venda doing research. The research is about women who have lost their children before they turned five years. I'm interested in finding out what led to the death of these children.

P: Okay

R: I had also explained that I will be recording our conversation. This is the recording device and I have already started recording.

P: Okay

R: If there is information you do not want to be recorded, you can tell me then I stop recording and resume after.

P: Okay

R: Also, participation in this research is voluntary you are not forced to participate and if you change your mind about participating in this study you can withdraw at any time. The other thing is the information you are going to share will be kept confidential, I won't write your name so that no one can trace the information back to you.

P: Okay

R: Since the information we will be discussing is sensitive, I understand it might affect you and bring back some memories as you have lost a child. If that happens you can inform me then I can arrange a social worker or psychologist to help you cope with those feelings or memories.

P: Sigh ……. Okay

R: Do you have any questions.

P: No, I understand

R: Okay, My first question is what are the circumstances that led to the death of the child.

P: Okay

R: Mmhhh

P: On the 31st of January 2015. I just felt pain and they took me to the hospital. When we arrived at the hospital, I seat for a long time without being attended while I was in pain. They only attended me for 5 minutes and told me that my measurements for the child are still far and the ways are not open. They returned me to the ward, I sat there. They called me again and put me in my own room. Later, they told me that my child is getting tired inside my stomach and I should be operated. When I looked in between my legs were green things and they told me that it is the child's stools. The child had released stools inside my stomach. They took me and prepared me to go to the operation room so that they would operate me and take out the child. They took out the child. When they were

busy operating me, l heard the doctor talking to the nurses saying the child hanged herself with the intestine. After some hours another nurse came in and l requested my child. Then the nurse told me that your child is not breathing well. The nurse went away. After a few minutes the nurse came back again and told me that your child is not breathing she has passed away. That's all what they told me.

R: Mmhhh

P: Yes, that is all what happened.

R: Okay, When you said on the 31st you started feeling pain, what exactly did you feel.

P: I just felt pain under my stomach button.

R: You had pains

P: Yes, l had some pains only

R: How would you describe the pain.

P: The pain was like what l feel when l am about to menstruate like period pain. But there was no water to show that they are labor pains.

R: Mmhhh

P: It was only pains

R: How many months was your pregnancy.

P: It was 9 months

R: Okay, before these 9 months did you experience any problem with your pregnancy.

P: Yes, I had problems with my pregnancy at 6 months. It was in October 2014; I don't remember the date. I was taken to the hospital Gorge Mukhari. I felt pain in the stomach under the stomach button; l did not know what was happening. The doctor said they did

not see any problem to the child and me. They did not understand what was causing the pain.

R: What was the pain like, did you get any medication.

P: It was just pain in the stomach, like stomach cramps; it lasted for a few days. I was not given any medication because they didn't know what was causing the pain and they didn't see any problem to me or to the child. They just told me to go home and have enough rest.

R: Okay, did it help.

P: Initially it didn't, I kept feeling the pain for a few days. The pain got better after a few days, then it would come and go till I didn't feel it anymore.

R: Okay, did you have any other symptoms besides the stomach pains.

P: No, it was just stomach cramps and stomach discomfort.

R: Okay, You mentioned earlier that you waited for a long time without being attended at the hospital?

P: Yes, When we arrived at the hospital we were told to go and open a file, my relatives went there to open a file for me and they said I wait for them seating there. Then after opening a file you will be called to be checked how the child is doing.

R: Mmmmhh

P: No one came to check me while I was seating there, and I was in pain. The nurse only came after a while, checked me using her hands and told me that the centimeters are still far. They later checked me again. I was in pain, but they kept on telling me that the birth path is not opening in such a way that the child will come.

R: Mmhhh

P: I was in pain, but they kept on telling me that the birth path is not opening in such a way that the child will come. So, because I was in pain I started pushing. The nurses had told me not to push but because I was in pain I thought if I push the pains will stop not knowing that I m causing a problem, making the child tired.

R: Okay, the nurses had told you not to push.

P: Yes, but they didn't explain why, and I didn't know what to do because I was in pain.

R: Okay

P: When they saw the child had released stools in my stomach that's when they started concentrating on me. They took me and prepared me to go to the operation room so that they would operate me and take out the child. I agreed and signed the papers for operation, I just wanted to be assisted because they had told me the child is tired and she had released stools which could cause some complications for the child.

R: Mmhhh

P: They took out the child, when they were done, they stitched me. After removing the child, they went with her, bathed her and came to show me.

R: Okay, so the child was born alive.

P: Yes, the child was still alive, she was not dead. She even cried when she was taken out. So, I thought she was fine because the elders say if a child is born and the child immediately cry it shows that the child is fine, there is nothing wrong, I didn't realise she had already been affected.

R: Okay

P: When they were done stitching me, they took me to my own room. I stayed being one because they returned with the child after showing me. Then I asked them where the child is. They told me that the child will come. I asked again after a while and they said the child will come. After some hours another nurse came in and I requested my child. Then the

nurse told me that your child is not breathing well. Then the nurse went away. After a few minutes the nurse came back again and told me that your child is not breathing she has passed away. That's all what they told me.

R: Mhhhh, I'm sorry about your loss. So, did the nurse say what caused the death of the child?

P: They said the breathing problem. They said it was caused by hanging herself with my intestine. After hanging herself it causes her to have trouble breathing that was the cause of her death.

R: Mhhmm, did they tell you if the stools affected the child in any way

P: No, they didn't say anything about the stools; they only talked about the breathing problem. They did not even explain what caused the child to release stools while in the stomach, I didn't ask them. They only explained that since the child released stools while in the stomach, they needed to operate, remove the child immediately to avoid causing complications for the child.

R: So, there was nothing else wrong with the child except the breathing problem

P: Yes, that's what they told me.

R: Mmmmhhh, was the child's weight normal at birth?

P: I don't remember properly because there is no paper or card that I was given but they didn't mention anything about her weight at birth so I don't think it was a problem.

R: Okay, so according to you what was the cause of death of the child.

P: Ahhhh personally I blame the nurses for my child's death. I went there in time as soon as I started feeling pain only to be attended last minute when the situation had gotten worse.

R: Mhhhhh, you feel you were not assisted properly.

P: Yes, they never concentrated on me maybe because the centimeters were still far, they were attending others and I ended up losing my child.

R: Mhhhh

P: Yaaaa, sometimes I think if they had attended me earlier and done the operation earlier maybe the child was going to survive. Or if they had done a scan, they would see it earlier that the child hanged herself and do the operation quickly. I even think when they saw that the way for the child to come is not open, they should have decided just to operate since they still operated me at the end, but it did not help the child was already tired.

R: Okay, scan was not done, how were they checking the centimeters.

P: No, scan was not done, the nurse was just checking with their hands. If they had done a scan, they would see it earlier that the child hanged herself and do the operation quickly.

R: Okay so it was the nurses who were attending you?

P: Yes, it was the nurses, the doctor only came after the child released stools then he said they needed to operate me as soon as possible to protect the child.

R: Okay so you feel the service was poor and it led to the death of your child.

P: Yes, there was too much delay in attending me and making the decision to operate me.

R: Okay besides this did you have any other complications during pregnancy

P: No, I only got sick at 6 months and at 9 months which I now know where labor pains. I never had any other problem, even my ANC appointments during pregnancy everything was fine, there was no problem with me or the child.

R: Okay, you used ANC services during your pregnancy?

P: Yes, but I was not attending ANC here I was going where I was staying.

R: Okay and they never identified any problem throughout the pregnancy?

P: No, everything was fine. They would check your bp and urine to see if you have STIs. When you are done, they would request you to take out your clothes and measure the size of the stomach. When they are done, they will give us some pills.

R: Okay, so were you taking the pills.

P: Yes, but there were some pills which bored me, and I did not use them.

R: Mhhhh, were there nurses aware you were not taking some of the tablets.

P: Noo, I did not tell anybody.

R: Okay, do you think that might have affected the child in any way.

P: I'm not sure but I think things would have been different if I took the medication because I don't know what caused the complications during labor and delivery. Though I think the delay made the situation worse.

R: According to your understanding what caused the death of the child

P: I think it's because she hanged herself with my intestines which caused her to have breathing problems, if it was not of that she might be alive.

R: Ok so if I understand you well, you had a sickness during pregnancy, and you experienced complications during labor. The centimeters were far, and the ways were not open and because of this there was a delay in attending you while you were in pain. Because of the pain you started pushing the baby until the baby got tired and the baby released stools while in the womb, so an operation was done to save the baby. On operating they discovered the child had hanged herself with your intestine which affected her breathing. Just after birth the child had problems breathing and she passed away.

P: Yes, that's what happened, that's how the baby died.

R: Okay, once again I m sorry about your loss and thank you for taking your time to participate in this study. Thank you for the information that you have shared. I am going to transcribe our conversation and I will come and show you just to cross check and ensure I understood what you just shared with me.

P: Okay

R: Thank you

APPENDIX I: Transcript B

TRANSCRIBED DOCUMENT

Participant 4

R= Researcher

P= Participant

R: Hello.

P: Hello.

R: How are you?

P: I am fyn.

R: eeehh.

P: How are you?

R: I am fine. Like l said, my name is Grace Chifamba

P: mmhh

R: I am from the University of Venda. I am doing research on mothers whose children died before turning 5years.

P: mmhhh

R: In this research, we want to know what caused the death of those children.

P: mmhhh

R: sooo like l said l will be recording our conversation using this recording device.

P: mmhhh

R: The other thing is, participation in this study is voluntary, you are not forced. Your name will not be mentioned in the study so no one can trace the information back to you. The information you share will also be kept confidential. It will not be exposed to other people except supervisors, it is confidential.

P: eehh

R: It can happen that after sharing the information, it will remind you of your child's death, if that happen and you will need counselling you should tell me. And if there is information you don't want to be recorded you can tell me I stop the recording then when you are done will continue recording again.

P: okay

R: About being affected by this interview, I will arrange a social worker or psychologist to give you counselling.

P: (Sigh)

R: Do you have any question

P: No

R: Can I start with my first question? Do you understand?

P: ehh.

R: Okay, my first question is what led to the death of the child.

P: For this death to occur, he became sick on Tuesday, he did not have a voice. When the voice was gone I took the child to the clinic on Wednesday and he was given an injection for his immunization.

R: mmhh

P: When he was immunized on Wednesday we came home. The following day was Thursday I heard the child groaning, we phoned another woman a traditional healer who tusa (who did the after-birth ritual of) the child and explained what was happening to the child. She said come with the child on Friday, She said come on Friday I will wake up in the morning to go dig the medicine to give the child.

R: Mhhh

P:eeehh, On Friday we went there, when we arrived we found her doing laundry and she said come Saturday and we said aahh we cannot come on Saturday because the women failed the previous day to go dig the medicine and even today and the child was not getting better, he was groaning in pain.

R: mmhhh

P: We suggested that she go with us to the river to dig the medicine since she has a car because the medicine, she had given us was dry and the child could not keep using it, it was even tasteless. We wanted fresh medicine. She refused saying she is too busy and has lot of laundry.

R: So, you had some medicine that she had given you before the child got sick?

P: Yes, this Shangaan lady is the one who (tusa) the child after birth. After that she was giving us medicine every month to give to the child. We were dipping the roots in water for a while to allow the medicine to dissolve into the water then give the child to drink. The first month and the second month that the child was tusiwa they had the roots but the third month the roots we were given were different and completely dry and we could not understand why those dry ones because they were different from those of first and second month.

R: Okay she is the one who did the after-birth ritual for the child. How does this after birth ritual assist the child.

P: It is our cultural practice that after birth a child should tusiwa. The child is given traditional medicine to drink to make him strong and protect him from catching diseases. The other (miri) medicines/herbs is put in the child's head, they cut the child in the head with a razor and rub in some traditional medicine.

R: Okay so that was done on your child.

P: mmhhh it was done on all my children. So, on Friday I started thinking since he was tusiwa (meaning since he went through the cultural after birth ritual) the problem might be ngoma (fontanel), because the ngoma was big. Since the Shangaan lady did not help us saying she is busy we went to another lady who also helps children.

R: Ok, is she a traditional healer as well.

P: Yes, she knows traditional medicine for children. She checked the child and said the child (unazvela zvautsamiwa- swa rigoni. She gave us medicine to assist the child, after that we came back. We prepared the medicine and gave the child. The child did not get better and he was no longer going to the toilet properly; he had not gone to the toilet since Thursday, but he was breastfeeding and eating soft porridge.

R: what type of medicine did she give and how do you prepare it

P: She gave us roots of a certain tree, we boil the roots in water, use the water to prepare soft porridge then give the child the soft porridge.

R: Okay

P: We went back home and asked some elders and other people with children where else can the child be assisted and we were directed to Venda, to a traditional healer who is an expert in children conditions. We had all started thinking it was ngoma (fontanel) then it was suggested that we take the child to that traditional healer in Venda, who is believed to be an expert in dealing with ngoma and could best assist the child. The child had two ngoma (fontanel), on normal position on top of the head and on the back (demonstrating

by touching her head on top and at the back). The ngoma on the normal position was big and it was starting to go down.

R: mmhhh, you said the child had two ngoma and the ngoma was big, so how did it affect the child.

P: Those who know they say after realizing the child has two ngoma I was supposed to be referred to traditional healers who are experts in infants conditions/healing infants. To reduce the size of ngoma, they cut on it with razor and put traditional medicine so that it beats properly like (b aba ba ba ba ba slowly -demonstrating with hand) but it was fast like ta ta ta ta ta ta – (demonstrating with her hand), they say the child was supposed to get wet medicine as they will be still strong than dry medicine and that medicine for applying on ngoma the traditional healer did not have it and that which reduce the size of ngoma should be there and they did not have them as well.

R: Okay so did you go to the traditional healer in Venda.

P: Yes, the same day late afternoon because we were worried the child was no longer going to the toilet properly, he was only passing urine. We arrived at the traditional healer. The traditional healer was surprised with the way the child was groaning in agony and she said she was not sure if she will be able to assist the child. But I suspected ngoma was the cause of the sickness, the ngoma (fontanel) was going deep down because the medication he was given by the first traditional healer was very dry it was supposed to be wet. Even when mixing it with water it took a long time to get wet so that it can be given to the child.

R: Mmmhhhh

P: The traditional healer in Venda told us that the Shangaan traditional healer who tusa the child did not attend the child properly and could not see rigoni in the mother.

R: Meaning she did not help you properly?

P: mmhhh she did not see it. When we got to Venda the traditional healer said do you see this mark, the traditional healer showed us a red mark at the back of the child's head. I said yes and she said yaa that's it, that's the thing troubling you. She said its rigoni. I immediately remembered feeling its signs, the itching. She said that's where your rigoni is. The traditional healer checked me and found it was big, so it was cut off.

R: Okay so what was cut off?

P: Rigoni, it was removed that Friday. They cut a growth from (demonstrating by pointing at her private parts. It had already caused damage when they cut it off. I stayed a long period of 3 months. I had already noticed because a child with rigoni does not face you directly. He avoids looking at the mother and I saw it that it was rigoni. The child will be doing like ……. (demonstrating by shaking her head showing that the baby will not be able to hold his head steady). It has been developing on me, but it had never killed any of my children before this one. When you have rigoni you can feel it, it will be itching. I just feel itching (pointing at her private parts). I had gone to the traditional healers previously and told them that rigoni is growing and they cut off, but I did not get a perfect person to remove it. But after the death of this child I never felt it again.

R: when she cut rigoni on you, did she do anything on the child.

P: No she didn't do anything on the child, after cutting off rigoni on the mother the child is supposed to get better as soon as rigoni is cut off, we were told to return the following day Saturday for the traditional healer to see if the child was getting better, so she could give him medicine and give me instructions how to give the child.

R: Okay

P: On the Saturday morning the child went to the toilet properly. We suggested to go back to the traditional healer in Venda so that she can assist the child. We went but on the way my husband said let's get into the doctor because of the way the child was. When we got to the doctor we booked, the doctor said a child does not book just go straight. I entered

inside consultation room. They checked his temperature, it was high. The child started coughing after coughing came blood; the blood came through the nose.

R: mmhhhh

P: I was holding him like this (demonstrating) when the child coughed blood was coming out, then I called the father and the doctor also came. When I holds him, they said I shouldn't open the child's mouth. The doctor said I should put the child on the bed so he can check him. When I looked at the child, I saw he was sweating too much, I was surprised why he was sweating.

R: Okay

P: After checking he said the child is dead. It took him a long time to tell us that the child was no more. I think he was afraid of the blood he saw coming out of the child's nose.

R: Mmmhhh, Did the Doctor say what was the child's sickness or cause of death.

P: No, he didn't say anything, but even when the child died you may not think he was dead, he looked very fresh.

R: The doctor did not say anything about the blood

P: No

R: did you ask

P: No, we didn't. The doctor asked if we had burial society or not, we said we don't have society. He said do you have a car. I said yes and he said take the child home. We took the child, went to buy coffin, we arrange funeral and bury the child.

R: mmmmhhh I'm sorry about your loss.

Silence

R: So, you said the problem started on Tuesday and Saturday he died.

P: Eeeehh

R: On Wednesday you took the child to the clinic and he was immunised. What did the nurses say about the condition of the child?

P: Yes, I took the child for immunisation, he was due to have his immunisation for 3,5 months. They immunised the child, after immunisation I requested the nurse to check the child. The nurse denied saying the child is still young to be taking medication. She said go to the phamarcy and tell them you need panado. In that panado go and add little water, give the child and give the child warm water.

R: Ok, so they didn't check the child

P: No, she didn't and I think they were supposed to check the child first but they just told me that the child is too young to use medication and they referred me to the pharmacy to buy panado. They said I should ask for panado for children at the phamarcy and they will give me panado for children. On that panado add little water because it has lots of power. Give it to the child with a teaspoon.

R: So, did you buy the panado.

P: Yes, I bought it and I was giving him in the morning and in the evening.

R: Okay, where you are giving him panado and traditional medicine at the same time.

P: Yes, I was using all of them. I was giving him panado and the traditional medicine as well. I was giving him panado 2 times a day morning and evening then the traditional medicine 3 times morning, afternoon and evening. I was trying everything; it's just that when your child is sick you will try everything.

R: Mhhhh. I heard you say the child didn't have a voice; his voice was gone.

P: Yes, His voice was not clear, it would come out when he is crying but it was not his normal voice which I am used to.

R: mmmhh, he was also not going to the toilet properly

P: Mmmmhh at first, he was not going to the toilet properly. It took two days from Thursday to Friday but Saturday morning he went to toilet accordingly the day he passed away. When he did, we thought it was a sign he is getting better but later he passed away.

R: Mhhhh, was the child feeding normally.

P: Yes, he was breastfeeding and eating soft porridge. I had just started giving him soft porridge.

R: Okay, how where you are feeding him since birth.

P: I was only breastfeeding him because I was told at the hospital that we should not give soft porridge before 3 months and I did not give him. I came and sit 2 full months without giving him soft porridge.

R: Okay

P: So 2 weeks before he turned 3 months, I saw he was growing then I went to Salema to buy infants mealie meal because its lighter, that one for children and I fed him with 4 spoons in the morning and 4 spoons in the evening, then I breastfed.

R: Mhhhhh, Do you think introduction of soft porridge might have contributed to the child not going to the toilet properly

P: Mhhhhh I don't think so because I was only giving 4 spoons in the morning and 4 spoons in the evening and I was making watery soft porridge because I had just started giving him.

R: Okay, did the child had this problem before.

P: Before 3 months he was fine, even when I came from the hospital, they told me the child is health there is no problem. The problem started after he turned 3 months, it was in May, he died 30 May.

R: Okay. I heard you say the child was immunised the day you took him to the clinic. Did you take the child for all vaccinations?

P: Yes, he was fully immunised, even that one for 6 weeks, he was injected and from there was receiving monthly vaccinations.

R: Okay, so you didn't think of going back to the clinic when you saw that the child was not getting better.

P: No, I didn't. I didn't see the use of going back to the clinic because when I went there they never checked the child and told me that the child was too young to take medicine, so I was just giving the child the panado they told me to buy.

R: Okay, so according to you what caused the death of the child.

P: Ahhh i can't really say this caused the death of the child because we were told different things. The child was sick for a week. I think it was a combination of different things, I had rigoni and I could feel the signs and the child had a sign of rigoni in his head. The person who tusa him did not check that. She was supposed to see it and remove it. It was left and grew and when they found it, it was very big and had caused damage to the child.

R: Mhhhmm

P: The traditional healer in Venda told us that we delayed we were supposed to bring him the child after birth so he tusa the child himself (perform the after-birth ritual). She said the other traditional healers did not attend the child properly and could not see rigoni in me. He also said the day I went to the pharmacy to buy panado I was supposed to tell them I want rigoni medicine they were going to give me and if I had used it that rigoni would have gone.

R: Meaning at the pharmacy they sell medicine for rigoni and they know how to heal rigoni with their medicine.

P: Yes

R: Okay so according to you its rigoni that caused the death of the child.

P: Yes, and ngoma as well the child had two ngoma and they were not beating properly. So, I think rigoni and ngoma caused the child to be sick then he died.

R: Okay so if I understands you well the after birth ritual for your child was not done properly and your child was not given the correct medication. The traditional healers who tusa your child did not do the process properly and they didn't have the proper medication; they did not notice rigoni, so they did not remove it until it was too late to assist the child.

P: Yes

R: The traditional healers also didn't attend the child's ngoma properly during utusa. The child also had two ngoma which were not beating properly and were going down and the traditional healers also didn't have the right medication for this condition and to help reduce the size of ngoma. All these problems caused the child to be sick, have problems going to the toilet and eventually die.

P: Yes, I think if the child was tusa by someone who know he couldn't have died because the problems were going to be identified earlier and the child was going to be given the correct medicine.

R: Thank you for participating in this study, thank you for taking your time and explaining what happened until the child died. I am going to transcribe this information. I will come back to you with the transcribed script just to make sure I understand and have properly written the information you gave me. Thank you

P: You are welcome.

R: Do you have any questions for me

P: No

R: Ok, Thank you.