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Health Literacy of Mothers Regarding Associated Factors of Pre-Ruptured Membranes on Perinatal Outcomes at Thulamela B Clinics, Limpopo Province

by

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DECLARATION

I, **Mashudu Venicia Balibali**, declare that the research topic entitled "**Health Literacy of Lactating Mothers Regarding Associated Factors of Pre-Ruptured Membranes on Perinatal Outcomes at Thulamela B Clinics of Vhembe District in Limpopo Province**" is my own work and I have never submitted it for any degree to this or any other institution. All materials used have been acknowledged both in text and in a list of references.

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DEDICATION

This study is dedicated to my late sister, Balibali Ntambudzeni Edith, and my late grandmother, Tshivhase Nyawasedza Avheani. These relatives have encouraged me to be the best, they never stopped believing in me. Even though they were both not educated, they were my pillars in everything—it's a pity none of them will witness and celebrate this achievement. I also dedicate this study to my husband, Bakali Avhatakali, my kids, Rotondwa and Vhuhulu, for taking this journey with me, for their support, understanding and encouragement all the way. You are the best family I could ever ask for.

This study is also dedicated to all mothers out there, either biological or otherwise, for you are more than a mother, providers who never stopped maintaining a fine balance between success and failure.

May God's Mercy and Grace Endure You Forever.

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Completing this Master's degree has been a long and sometimes discouraging journey, and I thank Father God who made it possible through His grace.

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ABSTRACT

Pre-rupture of membranes prior labour initiation could complicate approximately 5% of pregnancies and could be associated with a high incidence of perinatal morbidity and mortality complications. The major complication could be cord compression resulting in hypoxia. The aim of this study was to assess the health literacy of lactating mothers regarding associated factors of pre-rupture of membranes on perinatal outcomes at Thulamela B clinics of Vhembe district. A quantitative research approach with a cross-sectional descriptive design was used. The study population comprised a total of 210 lactating mothers within 6 weeks post-delivery. Data were collected by the researcher through self-administered questionnaires. The IBM Statistical Package for Social Sciences (SPSS) version 25 was used for data analysis. The results are presented in the form of tables and graphs based on probability allowing judgement to be made on variables. Validity and reliability was ensured. Ethical clearance was obtained from the University of Venda Research Ethics Committee and permission to access health facilities from Limpopo Province Department of Health.

Data revealed that maternal health literacy was very limited, implicated by low literacy level, culture, cluster family decision regarding health care, reliance on lay persons for health information and limited health information from health care professionals as evidenced by late booking, failure to recognize the significance of pre-ruptured membranes and delay in seeking health. Recommendations included emphasis on active participation and health information topic suggestions by obstetric clients; midwives to provide woman-centred care with health education being a norm; systems in organization to consider maternal health literacy extension to families and the community and also recommendations to policymakers to utilize media campaigns for promoting maternal health literacy.

Keywords: Health literacy, lactating mothers, perinatal outcomes, pre-rupture of membranes.

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy ()
CDC	Centres for Disease Control and Prevention
CHCs	Community Health Centres
DoH	Department of Health
EMS	Emergency Medical Services
HIE	Hypoxic Ischaemic Encephalopathy
HIV	Human Immunodeficiency Virus
IVH	Intraventricular Heamorrhage
MDG(s)	Millennium Development Goal(s)
MFMUN	Maternal Foetal Medicine Units Network
NEC	Necrotizing-Enterocolitis
NMR	Neonatal Mortality Rate
PROM	Premature Rupture of Membranes
PNMR	Perinatal Mortality Ratio/Rate
ROM	Rupture of Membranes
RDS	Respiratory Distress Syndrome
SA	South Africa
SDG	Sustainable Development Goal
SPSS	Statistical Package for Social Sciences
SROM	Spontaneous Rupture of Membranes
SANC	South African Nursing Council
WHO	World Health Organization

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 Introduction

Pre-rupture of membranes (PROM) refers to disruption of foetal membranes before labour begins, resulting in spontaneous leakage of amniotic fluid (Assefa *et al.*, 2018). According to Eslamian & Asadi (2002), patients with PROM present with fluid leakage, vaginal discharge and pelvic pressure, but do not have contractions. PROM could lead to poor neonatal outcomes and obstetric emergencies such as umbilical cord prolapses, sepsis, chorioamnionitis, prematurity, respiratory distress syndrome (RDS) and perinatal death (Peaceman *et al.*, 2015). It is necessary to empower pregnant women with adequate information on associated factors of pre-ruptured membranes, hence the need for this study. The study findings may contribute in assisting the early diagnosis and prevention of perinatal morbidity and mortality associated with PROM.

According to the Department of Health (DoH) Guidelines (2015), data from 2010 to 2013 report suggest that the main cause of perinatal deaths is related to challenges of the health care system, failure to use health care facilities in time by pregnant women, inadequacy of services and substandard care related to knowledge and skills of health care providers (Larsen *et al.*, 2017). In the Department of Health (2014) Saving Babies Report, the key findings indicated that neonatal mortality rate has been stagnant for the period 2010-2013 (Pattinson & Rhoda, 2016).

The neonatal mortality rate is highly associated with PROM in the 1000-1999-g weight category with asphyxia, prematurity and infections being the leading causes of deaths. A total of 50% in all neonatal deaths was thought to be preventable, with PROM as the most common preventable factor (Pattinson & Rhoda, 2016). The recommendations include reducing premature birth, asphyxia and infections and this can be achieved by empowering pregnant woman with adequate health literacy on associated factors of PROM on foetal outcomes, hence the need for this study.

Pregnant women may have the belief that one should only go for antenatal booking once the pregnancy is showing and if one experiences rupture of membranes prior term, this could contribute to delay in identification of risk factors contributing to poor perinatal outcomes. Verma, Jain & Budhwani (2016) stated that the time of onset of life-threatening complication to receiving appropriate treatment encounters 3 delays namely:

- Failure to recognize the significance of the problem by the pregnant woman and her family.
- Delay in referral system due to distance or difficulty in accessing transport.
- Delay in initiating treatment, once the woman reached the health care institution.

This study would like to address delays related to pregnant women and their families which might be related to low health literacy. Despite the free health services for pregnant women and children < 5 years, pregnant women are still likely to present late

for medical attention or resort to using traditional routes during obstetric emergencies including PROM and, as a result, both options may lead to poor perinatal outcomes. Health literacy includes skills and demands related to reading, writing, speaking and listening in accordance with cultural practices. Low health literacy is associated with poorer physical and mental health, less health care knowledge, reduced use of preventative services, increased hospitalization and high health care costs (Boland & Stacey, 2016).

According to the information published by the Health Systems Trust (Massyn *et al.*, 2015), Limpopo is amongst the provinces with the lowest adult literacy level at 88%. Relatively low levels of education and high levels of school dropouts make it difficult to entrench health-seeking behaviour through health education. This is further reflected in different ways ranging from poor attendance during antenatal care, late booking to delay in seeking health with major consequences for both the mother and expected new human being.

Gracey & King (2009) have shown that perinatal and neonatal health outcomes, including death are still a burning issue in developing countries and several interventions could effectively save many lives of infants. The intervention of empowering mothers with adequate knowledge regarding associated factors of pre-ruptured membranes may improve the perinatal outcomes and saves many lives, hence the need for this study.

1.2 Background to the Study

Health literacy is dependent on both individual and systematic factors, and it also

affects the quality of care. Health literacy as a public health goal is a challenge to contemporary health education and communication strategy in the 21st century, hence the study on health literacy of lactating mothers regarding associated factors of pre-ruptured membranes on perinatal outcomes.

Health literacy reflects the outcome of traditional health education based on communication of factual information, health risks and on how to use the health care systems. Such actions have limited goals towards improved knowledge of health risks, health services and compliance with prescribed actions, for example, improving knowledge on pre-ruptured membranes risks and outcomes (Nutbeam, 2008).

Individuals with limited knowledge about the body and causes of disease may not understand lifestyle factors and health outcomes. They may not recognize when they need to seek health care (Nutbeam, 2008) i.e., pregnant women may not be aware of risk factors of pre-ROM and health outcomes, hence they will not be able to recognize when they need health care. According to the National Institute for Educational Sciences (https://health.gov/communication/literacy/powerpoint/default.htm), health literacy is dependent on culture and culture affects how people communicate and understand health information. It affects how people think and feel about their health and how they respond to recommendations on lifestyle changes and treatment.

Culture will also affect how lactating mothers have communicated and understood the health information on pre-ROM. Health literacy is also dependent on the demand of health care and public health systems. Health information is a key resource for managing health system and improved health outcomes. Closing information gaps are

essential for guiding priority, policy makers as well as on the implementation of intervention (Nutbeam, 2008). The study on health literacy of lactating mothers regarding associated factors of pre-ruptured membranes on perinatal outcomes may assist in guiding the policy makers in closing the information gap with improved perinatal outcomes. Health education has been an essential component of action in promotion of health care and prevention of diseases which include campaigns to promote maternal and child health.

Findings by Nutbeam (2008) imply that lower community health literacy was a significant independent predictor of poor health. Low health literacy and poor health status was found to be associated with a lower level of education, older age, minority, rural residence and poverty in previous researchers. Hence, this study will be conducted in the rural area of Thulamela municipality with a high rate of poverty and school dropouts.

Nutbeam, (2008) findings imply that individuals in a community with a high rate of low health literacy will have worse health status due to fewer options for reliable answers on health-related questions, assistance with health-related materials or even navigation to health resources, for example clinics. Sentell *et al*. (2018) states that communities with lower level of health literacy may place a greater reliance on experience and information obtained from lay networks. Low health literacy on PROM will leave pregnant woman with fewer options for reliable answers and they end up relying on previous experience or information obtained from lay unreliable sources including traditional healers.

Prematurity is the principal risk to the foetus with its complications leading to perinatal morbidity and mortality. PROM is linked with a significant perinatal morbidity and mortality which supports the notion that PROM complicates nearly 5% of all pregnancies and its complications are the principal cause of neonatal deaths and immaturity related as the final cause of death (Abd-Alaziz, 2015; Deutsch *et al.*, 2010; Enakpene, Odukogbe, Morhason-Bello, Omigbodun & Arowojolu, 2010; Zhang, Zhou, Chen, Hao & Zhao, 2015). Pre-ROM may impair pregnant woman's ability to combat infections, due to the bacteria gaining access to the uterine cavity following PROM leading to increased risk of combating infections by 56% (Tavassoli, Ghasemi, Mohamadzade & Sharifian, 2010).

The infection will affect the uterine cavity which will then lead to serious infections, including chorioamnionitis, neonatal sepsis and maternal metritis. Cord compression and cord prolapse leading to foetal distress contributing to 50% increase caesarean sections rate may also result in case of PROM. When ROM occurs prior 34 weeks of gestation, it is highly associated with preterm deliveries and its complications of RDS, intra-ventricular heamorrhage (IVH) and necrotizing-enterocolitis (NEC), resulting in poor perinatal outcomes.

PROM in HIV-positive pregnant women not on treatment increases the risk of viral transmission contributing to a high rate of perinatal mortality and morbidity. This can also be ascribed to lack of knowledge about maternal health issues which led to non-participation and increased fear of the unknown by male partners. In general, men are not likely to value the accompaniment of female partners to attend antenatal care nor do they participate during intra-partum or even post-delivery events. For the husbands

who have interest and attempt to support the partners, diminished knowledge levels appeared to pose an obstacle to positive involvement, knowledge in general was limited (Nesane, Maputle & Shilubane, 2016). In another study done in Cameroon by Nana, Tebeu, Mbu, Fomulu & Leke (2010), 59% of their cases had pre-ruptured membranes spontaneously with 59% complicating into birth asphyxia.

A study by Abd-Alaziz (2015) in Egypt asserted that pre-mature rupture of membranes complicates almost 5% of all pregnancies, yet accounts for almost one third of all preterm deliveries. Due to low standard of health care and poor medical resources in Egypt as one of the developing countries, they recommended an extending time for pregnancy complicated by PROM into 36 weeks. Around 2001 in the UK and in South Africa, those who present with PROM without labour pains were told to come back in 3 days' time, if not yet in labour, and over the years the waiting time has been reduced from 72 to 48 hours, then 24 to 18 hours and up to 12 hours. The reduction in hours was based on a Cochraine Review, but experience and intuition were also relied on. To date, it is still difficult to comment on the duration of membrane rupture for those who ruptured at home (Shenker, Reed, Anderson & Borjon, 1991). Culturally, pregnant women believe that PROM is only considered a matter of urgency if it is accompanied by pain and may tend not to seek health care.

Childbirth education is designed to assist expectant mothers and their families through pre-conception planning, pregnancy and continues in an organized manner throughout pregnancy based on the physical and emotional changes occurring during each trimester. Yang, Luo & Chiang (2017) indicates that Public professionals may assume that people serve in their communities at certain levels of skills and

knowledge to understand and use health information and services though the demand of health care system does not match the skills, knowledge and experience of the target population. Accurate information concerning conception, nutrition, physiologic changes of pregnancy, labour, childbirth and neonate care should be included, therefore, antepartum, intrapartum and postpartum education are the responsibility of the midwife (Ziabakhsh, Fernandez, Black & Brito, 2018). Accurate information during pregnancy and labour regarding associated factors of PROM on perinatal outcomes is to be provided by the midwife. This will empower the women with knowledge and enables her to take steps to seek for health care when encounters PROM.

1.3 Problem Statement

In the Saving Babies Report (Pattinson & Rhoda, 2016), in 2013, the stillbirth rate was at 17.3% and the NNMR was 9.4 per 1000 live births, the early neonatal death was 7.9 per 1000 live birth, thus indicating the quality of antenatal, intrapartum as well as the postnatal care received. Patient related contributing factors include late booking, cultural issues as well as delay in seeking health care (Massyn *et al.*, 2015).

In Thulamela district, cultural practices of delay in seeking health, delayed antenatal booking until pregnancy may also contribute to the poor perinatal outcomes as PROM may occur as early as 16 weeks and by that time it is not yet showing and the pregnant woman not yet booked for antenatal care. The belief that when PROM happens before term is due to bad luck may lead to the pregnant women seeking for other solutions with delayed interval to seeking health. Despite the effectiveness of the Mom-Connect programme (http://www.health.gov.za/index.php/mom-connect), prolonged rupture of membranes is still diagnosed on admission.

The Saving Babies Report (Pattinson & Rhoda, 2016) has indicated that although there was a decline in perinatal mortality rate (PNMR) by 3.6% in 2013-2014, the Limpopo Province PNMR is at 27.9% with deaths due to prematurity thought to be preventable. In the maternal meeting held in May 2017 at Tshilidzini Hospital, there were 2 case presentation of PROM that complicated into perinatal mortality in both cases. PROM was found to have occurred at home and there was a time interval of more than 8 hours from the time of PROM to the time of arrival at the health care centre. In one case, the foetal heart was absent on admission and normal delivery of the stillborn resulted. In the second case, the foetal heart was present on admission, the baby was delivered through caesarean section, but died few hours after birth with severe birth asphyxia. With reference to both cases, there was delay in seeking health care following PROM wich might be related to inadequate health literacy regarding PROM. If maternal health literacy was adequate on PROM, the pregnant women would have recognized the urgency of PROM and sought health care as soon as they experienced the condition with better perinatal outcomes. Enakpene, Odukogbe, Morhason-Bello, Omigbodun & Arowojolu (2010) indicated that awareness on the risk factors is important for speedy diagnosis, women with adequate maternal literacy are likely to recognize the danger signs during pregnancy and present early for health care.

1.4 Purpose of the Study

The purpose is to assess the health literacy of lactating mothers regarding the factors associated with pre-ruptured membranes on perinatal outcomes at Thulamela B clinics.

1.5 Objectives of the Study

The objectives of the study were to:

- Assess the health literacy of lactating mothers regarding associated factors of PROM on perinatal outcomes.
- Identify the factors influencing the health-seeking pattern of women during PROM.

1.6 Research Questions

The research questions that will guide the study are as follows:

- What information does the lactating mothers have regarding membranes rupture and its associated factors on perinatal outcomes?
- Which factors influences health-seeking pattern of women during PROM?

1.7 Rationale of the Study

Due to the nature of PROM, it can occur at any stage during pregnancy with a wide range of predisposing risk factors. However, there is inadequate information documented regarding health literacy on PROM. Therefore, the researcher found it necessary to assess the health literacy amongst the Thulamela population in order to recommend interventions to promote awareness of associated factors of PROM and health promotion.

1.8 Significance of the Study

According to the United States Centres for Disease Control and Prevention (CDC,

https://www.cdc.gov/healthliteracy/learn/index.html), only 12% of adults have proficient health literacy. In SA, the General Household Survey (Statistics South Africa, 2012) conducted by STATS SA (http://www.statssa.gov.za/publications/P0318/P03182012.pdf), 92% of adults were assumed to be literate based on their ability to read and write and the highest grade achieved was grade 7 with only 7.1 % regarded as illiterate. Despite the high literacy level, Tyagi, Menon, Tomar, Singh & Goyal (2017) indicated that health literacy level was found to be very minimal in SA.

This study on health literacy of lactating mothers on associated factors of ruptured membranes on perinatal outcomes may contribute to improving the proficient health literacy provision through health awareness promotion programme to the pregnant woman and her family as well as increase frequent use of preventative servic,es hence reducing unnecessary hospitalization.

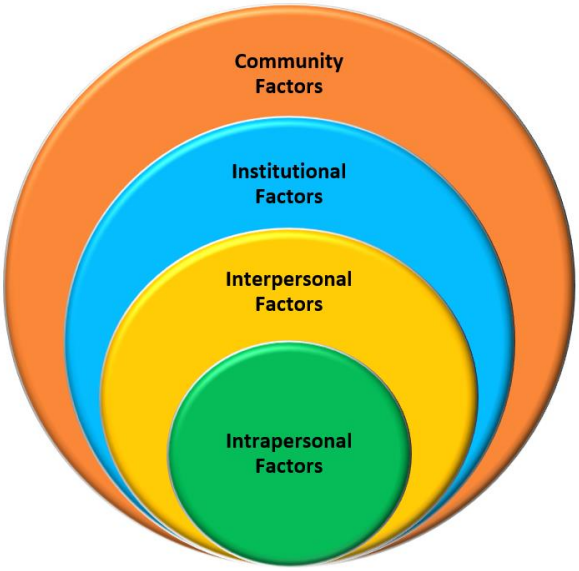
This study of health literacy of lactating mothers on factors associated with ROM on perinatal outcome may benefit the pregnant woman and family in future with improved health care awareness during pregnancy which will then assist in instilling and alerting the consciousness of pregnant women and family with pre-ruptured membranes. It might also assist in provision of accurate health information that can be clearly understood and utilized which will then provide positive engagement in self-care and disease management whilst understanding the risks. This might have a positive effect on health-seeking behaviour in accordance with quality of care provided and thus improve the quality of obstetric nursing care.

The findings and recommendations of the study may also assist the Department of

Health in developing policies to improve awareness programmes on PROM and associated factors. The study recommendations may assist future researchers with referencing on related topics. The Sustainable Development Goal (SDG) No. 17 Agenda is to transform the world in 15 years and crucial to building lives and dignity for all, support medical research and basic health in developing countries to meet the 2030 target is vital. This study might contribute in the reaching of 2030 SDG No. 3 target of reducing global maternal mortality rate to less than 70 per 10 000 target as it focuses on the crucial period where progress has not been rapid and may assist in the global reduction of preventable neonatal deaths to as low as 12 per 10 000 live birth as per SDG 3.2 thereby building lives and dignity for all (https://www.un.org/sustainabledevelopment/sustainable-development-goals/).

1.9 Theoretical Framework

Theories are formulated to explain, predict and understand phenomena in many cases to challenge and extend existing knowledge within the limits of a critical bounding atmosphere. It is the structure that can hold or support a theory and to provide a content in which to examine a problem (Glanz, Rimer & Viswanath, 2015). It is anticipated that this will have a broad significance and utility in maternal and child health services. McLeroy's Ecological Approach (McLeroy, Bibeau, Steckler & Glanz, 1988) will be utilized in this study as it focuses on both the population and individual level determinants of health and interventions (Figure 1.1).



Source: (Golden, McLeroy, Green, Earp & Lieberman, 2015)

Figure 1.1: McLeroy's ecological approach

Health is determined by the following multiple level of influences or factors:

- Community factors
- Institutional factors
- Interpersonal factors
- Intrapersonal factors

1.10 Application of McLeroy's Ecological Approach in the Study

It entails the following external criteria:

1.10.1 Interpersonal Factors

Interpersonal factors pertaining to health-related behaviour incorporate physiological process and interpersonal influences. The pregnant women's own belief and understanding will also affect their health-seeking behaviour, i.e., the pregnant

women's belief and limited health literacy on PROM will affect their health-seeking behaviour when PROM occurs. They may ignore mild infections like urinary tract infections (UTI) and not be treated which may lead to PROM. Pregnant women's limited knowledge on diet may lead to PROM, some are afraid to eat in fear of gaining weight, especially with teenagers and this in turn will lead to PROM and its complications. The proximal cause for behavioural changes lies within an individual rather than the social environment, intervention at this level requires a variety of strategies such as educational programmes, mass media, support groups and pregnancy counselling to improve health literacy to pregnant women on PROM and its associated factors, thereby reducing the risk of high perinatal mortality and morbidity, knowledge and attitude to comply with behavioural norms of pregnant women.

1.10.2 Intrapersonal Factors

Intrapersonal factors relate to significant others who have a crucial influence in the decision of pregnant women to seek health care and health-related behaviour. Being influenced by significant others, PROM may not be considered as an emergency which escalates the risk of perinatal morbidity and mortality when cord prolapse and infection is present. Social relations are the essential aspects for social identity and provide crucial social resources, including emotional support, information, social roles and tangible aids in fulfilling personal obligations and responsibilities, especially with first-time pregnant women. Family and social support also affect the pregnant women's health-seeking behaviour—women with positive family support and social support may tend to seek health care earlier because they have the support. Pregnant

women who are pregnant for the first time, especially teenagers, may lack the necessary support, with anxiety and fear of the unknown due to low health literacy they fail to recognize the seek for medical intervention when PROM occurs.

1.10.3 Institutional Factors

Institutional factors focus on environmental determination of the pregnant women's health-seeking behaviour during ROM as the effect of interpersonal relations. In this study, the institutions will be clinics where pregnant women are assisted. The main concern is on how institutions change as a target for health promotion activities and their context in dispersing of health promotion programmes for pregnant women in hospitals, health centres and clinics. There is a need for woman-centered care to facilitate establishment and achievement through health promotion.

The attitudes and being judgmental by professionals may implicate the early seeking of health by the pregnant women as this leads to fear and may result to alternative routes, e.g., traditional, with delay in seeking health, hence we still have deliveries of unbooked uncases and prolonged ROM >24 hours on admission. The provision of child birth education may be unsuccessful when pregnant women are in fear and anxious of the health care professional and prolonged queuing at the health care facilities with the issue of staff shortages in all institutions. The provision of child birth education contains limited knowledge of which the pregnant women may miss the important information and be afraid to ask for clarity. The pregnant women may miss understanding the perinatal effects of PROM and, when it occurs, then decide to sit at home awaiting the pain

1.10.4 Community Factors

Community factors act as a central role in public health which can be defined as partnered social interaction on aggregate of pregnant women in a geographic location. In this study, the view of community embraces pregnant women's families, personal friend's network and neighbourhood which are crucial social and identity sources. Community beliefs and cultural practices affect women's choice of health care services. The community belief of consulting with those they believe know best, including traditional birth attendants and older women impact on the health-seeking behaviour, hence there is still late booking while waiting for pregnancy to show. The view of pregnant women's families and sources of information may lead to misinformation regarding PROM resulting in delay in seeking health when it happens, due to the community beliefs and cultural practices pregnant women's families as reliable source of information may fail to recognize PROM as an obstetric condition in need of urgent medical attention due to limited health literacy.

1.11 Definitions of Terms

1.11.1 Health Literacy

Health literacy is a broad set of skills that helps patients to understand health information, implement basic health care activities and navigate health care system (DeWalt & McNeill, 2013). In this study, it will be the broad skills of lactating mothers that help them to understand the associated factors of pre-ruptured membranes.

1.11.2 Lactating

Lactating is a period following birth during which milk is secreted from the breast (Kaushik, 2016).

1.11.3 Associated Factors

Associated factors are the interrelated influences contributing to a result (Antay-Bedregal, Camargo-Revello & Alvarado, 2015; Protheroe *et al.*, 2017; Xie, Ma, Zhang & Tan, 2019). In this study, associated factors will be the interrelated influences of ruptured membranes from pregnancy, delivery, until 6 weeks of life.

1.11.4 Prerupture of Membranes

Prerupture of membranes is a condition that occurs before 37 weeks of gestation whereby rupture of the foetal membranes occurs prior the onset of spontaneous uterine activity resulting in cervical dilatation (Fraser, Cooper & Nolte, 2006). For this study, it will be rupture of membranes at any gestation prior the onset of labour.

1.11.5 Perinatal

Perinatal is the period from the 28th week of pregnancy which is the approximate time for infant viability to the end of the first week of life (Laopaiboon *et al.*, 2019). In this study, it will be the period from birth up to seven days of life.

1.12 Research Design and Methodology

The study design was a quantitative, cross-sectional descriptive study survey to collect data from lactating mothers within 6 weeks following delivery from 12 selected clinics at Thulamela district, Limpopo Province, South Africa. The respondents were above 18 years and gave own consent. Data were collected using self-developed questionnaires because they are reliable and respondents felt free to answer questions with honesty. Health literacy was assessed using a literacy screening tool (Chew, Bradley & Boyko, 2004).

Antenatal care attendance was measured as *Yes* or *No*. Perinatal outcomes were measured by the birth status of child, which is either born healthy, born sick or admitted, baby born and didn't survive. Data were analyzed using SPSS version 25, results interpreted as frequencies and percentages. Results were presented in the form of tables and graphs. The detailed methodology is discussed in Chapter 3.

1.13 Ethical Considerations

When people are used as subjects, great care must be exercised to ensure that their rights are protected (Polit & Hungler, 2013). Ethics was considered in the following manner:

- Ethical clearance was obtained from UNIVEN Research Ethics Committee

- Protection of human rights

Detailed ethical considerations are discussed in Chapter 3.

1.14 Layout of Study Chapters

Chapter 1: Overview of the research Study

Chapter 2: Literature Review

Chapter 3: Research Methodology

Chapter 4: Presentation and Interpretation of the Results

Chapter 5: Summary, Limitations, Conclusions and Recommendations

1.15 Summary

In this chapter, the overview and background of the study was discussed. The problem statement, study purpose and objectives were also included. The research question, rationale of the study with significance of the study were discussed. The theoretical framework was also considered. The next chapter will discuss the literature review.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The previous chapter discussed the overview and background of the study, problem statement, research purpose and objectives. The research question, rationale and significance of the study was also included and the theoretical framework was also discussed. This chapter presents the literature related to health literacy of lactating mothers on associated factors of pre-ruptured membranes on foetal outcomes within Thulamela municipality of Limpopo Province.

The purpose of the literature review in this study is to provide the researcher with information of what has already been identified concerning the health literacy of lactating mothers on associated factors of PROM on perinatal outcomes. Literature will focus on health literacy concepts, health literacy within the community, cultural and religious influences during pregnancy, roles of midwives in health promotion, incidence, clinical presentation and complications of PROM.

2.2 Health Literacy Concept

Charoghchian Khorasani, Peyman & Esmaily (2018) indicated health literacy as an emerging concept, a major health issue and a global challenge for the 21st century. It has been recently introduced as one of the determinants of health. Health literacy includes gaining information, personal skills and carrying out activities to promote per-

-sonal and social health status by modifying lifestyle. It focuses on developing individual skills and self-esteem to improve women's health and empower them to track, validate and use information for controlling health determinants. WHO (World Health Organization, 2009) indicated maternal health literacy as important because antenatal care is the 1st exposure of many women into the health care system. The first experience with this complex system even with adequate health literacy, it may be scary situation and women with low health literacy may encounter more difficulty in learning new information. Educating females is essential to promote the family health status as women have been identified as the initial population in increasing emphasis on health literacy hence this study of health literacy of lactating mothers on associated factors of pre- ruptured membranes on perinatal outcomes.

Antenatal education focusing on pregnancy, delivery and post-partum care may assist in improving maternal health literacy. Charoghchian *et al*. (2018) found a significant correlation between health literacy level and the mother spouse's or partner's educational level and noticed a difference between maternal health and educational levels in women with educational level of diploma and above.

Inadequate health literacy was found to be associated with less vitamin intake and non-breastfeeding, no relation was noted between maternal health literacy and age in their study. Their study findings also indicated that it is important to improve maternal health literacy in improving community health status. Significant relationship was found between maternal health literacy with family income and educational levels Charoghchian *et al*. (2018). It is essential to provide educational interventions directed at improving maternal health literacy as one of the community health priority with focus

on individuals with low income and low educational levels (Charoghchian Khorasani *et al.*, 2018). The WHO (World Health Organization, 2009) 7th Global Conference on Health Promotion, Track 2 focuses on health literacy and health behaviour. Health literacy was defined as the cognitive and social skills determining the motivation and ability of individuals to gain access, to understand and to use health information in a way which promotes and maintains good health. Health literacy means more than being able to read pamphlets and successfully make appointments, it is by improving accessibility of health information and the capacity to use it efficiently.

Health literacy is critical to empowerment as it goes beyond narrow concepts of health education and individual behaviour, orientation communications and further addresses environmental, political, social factors that determines health (World Health Organization, 2009). The track was based on closely examining issues involved in achieving health literacy in a comprehensive sense, identifying strategic actions needed to lead the way forward. It was aimed at examining the contribution to health literacy by other sectors and consider advocacy with strategic alliance in all educational levels.

With the recognition that health literacy requires more than disseminating information, it also explores the latest development in determining how people can develop skills, knowledge for good health maintenance. Health literacy regarding PROM determines how pregnant women can develop the skills and knowledge on PROM for good health maintenance with improved perinatal outcomes. WHO (2009) further indicatedf that health education is aimed at influencing not only the individual lifestyle decisions, but also raising awareness on the determinants of health, encouraging individual and

collective actions which may lead to modification on such determinants. WHO, (2009) indicated that health education that goes beyond diffusion of information, entails interaction, participation and critical analysis that contribute to health literacy leading to personal and social benefits such as enabling effective community action thereby contributing to the social capital development. Health literacy regarding PROM will lead to personal and social benefits with healthy mothers and babies. It will promotes vital empowerment in achieving internationally agreed health and developmental goals as well as emerging threats, hence the need for this study.

Nutbeam (2008) described health literacy as a composite term to explain a range of outcomes to health education and communication activities, from his perspective health education is directed towards improving health literacy. Health education has been an essential component of action to promote health and prevent diseases throughout this century, i.e., health education on PROM is essential in promoting health thereby preventing poor perinatal outcomes. Campaigns to promote maternal and child health, prevention of communicable diseases as well as promoting immunization and other preventative health activities have a long history.

Nutbeam, (2008) further stated that health literacy assessed on individual ability to read and write is not a guarantee that such individuals will respond in a desired positive manner towards health education and communication activities. According to Nutbeam, health education has been seen as a tool of disease prevention, considerably a steering wheel by the new development of new generation with more sophisticated theory. Nutbeam (2008) continues to indicate that health education directed towards health promotion and disease prevention remains fundamental in

developing countries. Health literacy based on the individual's ability to read and write provides less guarantee that a person will respond in a desired way towards health education and communication activities. Levels of health literacy, according to Nutbeam (2008) are as follows:

- **Functional health literacy:** This reflects the outcome of traditional health education based on communicating factual information on health risks and usage of the health system; such actions have limited goals directed towards improving knowledge on health risk, health services and compliance with prescribed actions. Low literacy on PROM risk will lead to poor compliance on prescribed action of seeking health care sooner with poor perinatal outcomes. Generally, such activities will result in individual benefit though it may be directed towards population benefit, e.g., screening programmes and promoting participation on immunization.

- **Interactive health literacy**: This reflects the outcome to health education approaches. It focuses on personal skills development in a supportive environment. It is directed towards improving personal capacity to act independently on knowledge specifically to motivation and self-confidence to act on the health advice received. It is directed towards pregnant women's capacity to act independently on health literacy regarding PROM and act in confidence in early seeking health care following the given health advice.

- **Critical health literacy:** This can be linked more to population benefit alongside individual benefit. Health education at this level is directed towards

improving individual and community capacity to act on the social and economic determinants of health. Adequate health literacy regarding PROM will lead to positive perinatal outcomes benefiting pregnant women and the community.

- **Improved health literacy:** This involves more than the transmission of health information. Helping people to develop confidence to act on the knowledge and ability to work with and support others, which will be best achieved through more forms of communication and through community-based educational outreach. Community-based educational outreach regarding PROM will improve the confidence to act confidently on the knowledge of PROM and support for other pregnant women.

Charoghchian *et al*. (2018) found significant correlation between health literacy level and the mother's educational level. They found a considerable difference between maternal health literacy and educational levels in women with educational level of diploma and above. In their study, inadequate health literacy was associated with reduced vitamin intake and non-breastfeeding and there was no significant relation between maternal health literacy and age.

They asserted that it is of paramount importance to improve maternal health literacy in order to improve community health status, especially in a community with low income and educational levels, hence the need for this study of health literacy of lactating mothers on associated factors of pre-ruptured membranes will be done in the rural area of Limpopo Province.

2.3 Health Literacy Within the Community

According to current views, an individual's health literacy is an established predictor of individual health outcomes (Sentell *et al.*, 2018). Both individual and community health literacy are significant. Primary health care providers should consider and address health literacy at both individual and community level. This is because maintenance of good health and management of diseases takes place within a community. The authors cited above further indicated that it is critical to identify meaningful health predictors at both individual and contextual level in order to develop a sound tool and intervention strategy. Community educational level is associated with community health literacy level and education impacts individual health above and beyond socio-economic characteristics of individuals. Community education level on PROM impacts on the individual health in association with community health literacy level.

In their study Sentell *et al*. (2018), reported that a low community health literacy was significant independent predictor of poor health. Low health literacy and poor health status was associated with less education, older age, ethnicity, gender, rural residence and poverty in line with previous assertions. Their findings imply that individuals in community with a high rate of low health literacy level will have the worse health status than an individual within a community with low rates of the health literacy due to the fact that communities with higher rates of health literacy have fewer options for reliable answers to health-related questions, assistance with health-related materials or navigation to health resources such as clinics. Sentell *et al*. (2018) stated that communities with lower level of health literacy may place a greater reliance on

personal experience and information obtained through lay networks and public health messaging available across a region may be less effective in a community with high levels of low health literacy. Community low health literacy level regarding associated factors of PROM will place a greater reliance on personal experience and information through lay networks with greater possibility of misinformation leading to poor perinatal outcomes. Sentell *et al*. (2018) emphasized that individual health literacy skills are also relevant to health status individuals with higher health literacy in a lower health literacy environment still retain their skills and may have access to a variety of sources for reliable health information.

Individuals with lower health literacy in a higher health literacy environment may not be fully able to take advantage of health information available or they may not find the materials targeted toward their needs (Sentell *et al*. 2018). Primary health care providers can improve both individual and community health literacy by providing community health education events on PROM to reach pregnant women and community beyond the traditional patient encounter.

Yang, Luo & Chiang (2017) stated that public professionals often assume that people in their communities have certain levels of skills and knowledge to understand and use health information and services even though the demands of health care system do not match the skills, knowledge and experience of targeted audiences. Yang *et al.* (2017) denoted that individual factors affecting health literacy include skills, health knowledge, demographic culture as well as experience. Health literacy is dependent on both individuals and systematic factors, according to the US National Center for Statistics, Institute for Educational Sciences and the Institute for Educational Sciences

(https://health.gov/communication/literacy/quickguide/factsbasic.htm). In their study the following factors were addressed to affect health literacy (Parker, Ratzan & Lurie, 2003).

2.3.1 Communication Skills of Lay Persons and Professionals

This includes literacy skills such as reading, writing, numeracy, oral and comprehension. Communication skills are context and specific. Individuals with less communication skills, those who are unable to read and write well will have low health literacy skills and knowledge (Parker, Ratzan & Lurie, 2003). Health information regarding PROM displayed at the health care facilities may be accessible, but difficult to understand due to the impaired skills.

2.3.2 Knowledge of Lay Persons and Professionals on Health Topics

Parker, Ratzan, Lunie (2003) findings shows that people with limited or Inaccurate knowledge about body functioning and disease causes may not understand the relationship between lifestyle factors which include diet, exercises and health outcomes. They may not recognize when the need to seek care due to limited knowledge about the health condition and less knowledge on the effects of the condition, pre-ROM may be noticed when it happens, but with less knowledge about the condition and its effects, the need to seek health care may remain unrecognized resulting in poor perinatal outcomes. However, health information can overwhelm people with advanced literacy skills.

2.3.3 Health Literacy is Dependent on Culture

Culture affects how people communicate and understand health information. Culture

affects how people think and feel about their health and when people can seek health care. It also affects how people respond to recommendations for lifestyle changes and treatment (Parker, Ratzan & Lurie, 2003). The cultural belief that pre-ROM is due to witchcraft or failure to obey ancestors and not seen as an obstetric condition that needs urgent medical attention may affect when the pregnant women will seek health care.

2.3.4 Health Literacy is Dependent on the Demands of Health Care and Public Health Systems

Individuals need to read, understand and complete different kinds of forms to receive treatment and to pay reimbursement; they need to know about various types of health professionals and services as well as how to access the care (Parker, Ratzan & Lurie, 2003). Pregnant women need to be aware of the availability of maternal health care services for PROM and how to reach them.

2.3.5 Health Contexts are Unusual Compared to Other Contexts

Parker, Ratzan & Lurie, (2003) further found that due to underlying stress and fear factors, health contexts may involve unique conditions such as mental and physical impairment due to illness. Health situations are often new, unfamiliar and may be intimidating. Individuals with limited health literacy skills have a higher utilization of treatment services, hospitalization and emergency services with lower utilization of preventative services. Higher utilization of health services results in high health care costs.

Health literacy affects the quality of care, people with limited health literacy often report feeling sense of shame regarding their skills level. Individuals with poor literacy skills

are often uncomfortable about being unable to read well and develop strategies to compensate (https://health.gov/communication/literacy/quickguide/factsbasic.htm). Pregnant women with poor literacy levels may develop strategies to compensate during PROM and tend to not seek health care. Mathole, Lindmark, Majoko & Ahlberg (2004) stated that belief systems play a valuable role in health-seeking behaviour, although all pregnant women are encouraged to book early for antenatal care, belief in certain cultural practices are contributing to delay in antenatal booking and delay in seeking health care. Maimbolwa, Yamba, Diwan & Ransjö-Arvidson (2003) indicated an association between health literacy and health behaviour with impacts on pregnancy and perinatal outcomes. Cultural practices are regarded honourable health intervention by the pregnant women and her family. Mogawane, Mothiba & Malema (2015) indicated that cultural traits are passed within generations and, as they are embedded in a society, they become part of people's lifestyle. Hence, it is difficult to change them as people have adhered to them through their entire life.

Bookari, Yeatman & Williamson (2016) indicated that knowledge only should be considered harmless during pregnancy, although traditional healers may be illiterate their sound knowledge on attending to birth is to be valued. Communication and understanding on cultural practices by the health care workers and the pregnant woman would improve the health literacy of the pregnant woman concerning health care services to ensure quality provision of health care with no need to be against the harmless cultural practices. Maimbolwa *et al*. (2003) indicated that people show trust and have faith in their carers' advice.

2.4 Cultural and Religious Influences During Pregnancy

Cultural beliefs place greater influence on women use of formal maternal health services. Withers, Kharazmi & Lim (2018) indicated that traditional beliefs and practices are prevalent during pregnancy and childbirth. Women's fear with regard to health care facilities has created a barrier in accessing health care which involves fear of unnecessary medical intervention. Women with PROM without pains may have fear in accessing health care in fear of being done the operation which may be regarded as an unnecessary medical intervention.

Practically, a wide range on traditional beliefs and practices during pregnancy, childbirth and during postpartum period is involved, the putting of rope either from the pastor or the traditional healer around the waist during pregnancy is practiced amongst Africans in different religions with the belief that the rope will protect the unborn baby from evil spells and that it will prevent pre-term delivery as it is supposed to be cut only once the pregnant woman is about to deliver (Mathole *et al.*, 2004).

A wide range of information is required regarding the benefits of formal maternal health services and such educational programmes need be expanded to the pregnant woman, and towards partners and in-laws. These will assist in the early identification of pregnancy signs in need of urgent medical intervention, including pre-ROM, hence, improving the perinatal outcome and reducing the rate of perinatal morbidity and mortality.

Health care professionals need to recognize and appreciate common local beliefs that are harmless to the mother and child. These will enhance the use of formal maternal

health care services provided such that it will be better positioned in providing culturally competent care instead of reducing available choices of pregnant woman. Understanding, respect and integration of cultural interpretations regarding childbirth and the women needs with the family needs to be considered by health care professionals (Withers *et al.*, 2018)

DeWalt & McNeill (2013) found that illiterate women may be unable to obtain professional health services due to lack of awareness on availability of such services, fear and feeling of withdrawal towards modern health care services. On the other hand, educated woman were found to have a better understanding on the health care system and services rendered; hence, they are less exposed to accept traditional practices. Traditional beliefs and taboos in the woman's choice of health care during pregnancy can affect early detection of warning signs, complications and responses to such warnings. Reliance on traditional taboos and religion impact on the pregnant woman's decision to seek health care and compliance on treatment and education received (Evagorou, Arvaniti & Samakouri, 2016). Traditional beliefs and taboos during pregnancy can have an effect on early recognition of PROM and response of action with impact on the pregnant woman's decision to seek health care. The compliance on health information received regarding PROM will also be affected with delay in response to PROM, leading to poor perinatal outcomes.

Low community health literacy was found to be a significant independent predictor of poor health. Low health literacy and poor health status were found to be associated with less education, older age, minority, gender, race, rural residence and poverty in previous researches (Sentell *et al.*, 2018). The findings imply that individuals in a

community with highest low literacy level will have the worse health status compared to individuals with a low health literacy level this is because individuals within a community with a high rate of low health literacy level have fewer options for reliable answers regarding health-related questions, they have limited assistance with health-related materials, including navigating health resources.

Communities with low health literacy level may place greater reliance on personal experience and information through lay networks (Sentell *et al.*, 2018). Women within a community with low health literacy level may experience pre-ROM at home, but relying on previous experience that the last time they experience pre-ROM they were admitted and delivered the second day, then they decided to stay at home for a day knowing that they will not deliver soon and seek health care the next day leading to delay in seeking health due to failure to recognize the urgency regarding the matter with detrimental effects affecting both the mother and the unborn baby, including infections and risk of umbilical cord prolapse.

Sentel *et al*. (2018) maintained that public health messaging available across the region may be less effective within a community with a high rate of low health literacy level. Individual health literacy skills is in relation with their health status, individuals with high health literacy skills in a low health literacy environment retain their skills and have access to a variety of reliable sources of health information including health care professionals and through the internet, they have reliable source of health information regarding associated factors of PROM.

Individuals with low health literacy level within a higher health literacy environment

may not be able to take advantage of the available health information and may not find health materials targeted to their needs, including clinic posters on risk factors of PROM and what needs to be done when it happens. This implies that individuals with a high health literacy level have a better chance of improving their health status through health information, thereby improving their health literacy level while, on the other hand, the ones with a low health literacy will not have the opportunity and chance to improve their health status through health knowledge from reliable health information sources and materials with poor perinatal outcomes following PROM. Primary health care services need to improve at both individual and community health literacy levels, including providing community health education events directed in reaching individuals beyond a traditional patient encounter.

Health literacy is crucial for health information empowerment, improving people access to health information will also improve their capacity to use it effectively (Sentell *et al.*, 2018). Improving pregnant women's access to health information on danger signs during pregnancy, including PROM, will improve their capacity to use it effectively by seeking health care as soon as it happens.

A study in Nigeria supported religious and cultural impact in maternal health care services utilization and perception of efficacy (Evagorou *et al.*, 2016). Religious and traditional beliefs were found to have an influence on the maternal mortality rate in Nigeria. With major focus on diet and behavioural taboos during pregnancy, women remain indoors and rely on the religious Muslim leaders to read the Quran with the belief that it will protect the unborn baby from any danger instead of going to the health care facility.

Such practices impact negatively on antenatal services utilization, attendance and messages received. Therefore, the ability of pregnant woman to read and understand antenatal care messages may affect the acceptance and rejection and interpretation of traditional practices, the practices will impact negatively on the message received regarding PROM (Evagorou *et al.*, 2016).

2.5 Role of Midwives in Health Promotion

Beldon & Crozier (2005) stated that health promotion is of vital importance to midwives who promote health rather than manage diseases and ill health. Much of the role of midwife during pregnancy is health promotion and a more explicit application may carry benefits of meeting government policies and public health. Midwives should work in partnership with pregnant women and their families to provide an educational experience each time they meet.

The Department of Health (Pattinson & Rhoda, 2016) has indicated that essential information to be provided to all pregnant women verbally and where possible written pamphlets including the following danger signs: severe headache, abdominal pains, drainage of vaginal fluid, vaginal bleeding and reduced fetal movements. All pregnant women who experience any of these signs should report immediately for health care. Antenatal care attempts should aim to ensure antenatal preparation with best possible outcome to both the mother and the baby. These can be achieved by screening for pregnancy problems, assessment of pregnancy risks, and treatment of problems that may arise during pregnancy. Medication that may improve the pregnancy outcome must be given and pregnant women need to be provided with information to ensure that they are physically and psychologically prepared for childbirth and parenthood

(Pattinson & Rhoda, 2016).

The current propel on public health policy as the disadvantage that begins before birth and can intensify after birth, obstetric care is fundamental in tackling the origins of disadvantageous around time of birth, proactive in engaging all women from all groups and communities early in pregnancy and maintaining contact during antenatal and postnatal care (Manning, 2016). Midwives values, beliefs and attitude may impact on the care given to pregnant women hence they need to facilitate change in women health behaviour. Midwives provide holistic care to the mother and baby, their knowledge and influence greatly affect the pregnancy outcome and role in health education and promotion. Vulnerable group entails those who have poor financial and social support, poor lifestyles and limited access on health care (Bowden, 2016).

2.6 Incidence of PROM and Outcomes

Yang, Taylor, Kaufman, Hume & Calhoun (2004), in a study done over a 6-year period, reported that 11% of cases were complicated by pre-ROM, 37% presented with chorioamnionitis,17.8% had early neonatal death due to severe prematurity, RDS, NEC and sepsis. A study by Nana *et al*. (2010), over a 3-year period, found that 6.4% had pre-ROM with 59% complicating to birth asphyxia and prematurity. Another study by Voroteliak (2011) over 2 years, reported 66% pre-ROM and 22% ended being neonatal death due to asphyxia and prematurity.

Dars, Malik, Samreen & Kazi (2014), in their study, observed that 26% of their cases had pre-ROM for less than 24 hours with 74% who had pre-ROM for more than 24 hours, 12% were complicated by sepsis and chorioamnionitis, 9% into hypoxia, pre-

maturity at 5%, neonatal deaths and NEC at 2%. In another study, Jameela Diraviyam & Karunakaran (2017) reported that 77% of cases had late pre-ROM, 60% had early pre-ROM, 18% had chorioamnionitis, 73% were admitted due to prematurity complications, 12% with sepsis. A study by Abd-Alaziz (2015) supported the observations that pre-ROM complicates 5% of all pregnancies and accounts for one third of all preterm deliveries.

2.7 Factors Associated with PROM During Pregnancy

With the incidence of PROM affecting about 5% of pregnancy, pregnant women and unborn babies exposed to PROM are at greater risk of intra-amniotic infection which may result in poor perinatal outcomes. The factors associated with PROM includes HIV/AIDS, teenage pregnancy, maternal infection, dietary influences, previous preterm labour, multiple pregnancy and chorioamnionitis.

2.7.1 Pre-Ruptured Membranes Associated with HIV/AIDS Infection

Romero, Dey & Fisher (2014) indicated PROM as the risk factor for mother-to-child HIV transmission as it increases cytokine activity of amniotic fluid and intrauterine infection attracts the HIV-infected maternal leukocytes into the amniotic cavity which will further lead to increased replication of HIV, resulting in greater risk of mother-to-child transmission. They further suggested early administration of antibiotics [see also (Mercer, 2012)] may be beneficial in reducing the intrauterine infection which will also reduce the attraction of HIV-infected maternal leukocytes, thereby reducing the risk of mother-to-child transmission.

However, Modena, Kaihura & Fieni (2004) in a double-blinded placebo controlled

clinical evaluation regarding antibiotic efficiency in reducing chorioamnionitis related with mother-to-child transmission of HIV noted that simple antibiotic administration during antepartum or peripartum did not have an effect in reducing the risk of vertical HIV transmission of mother to child. Khatri & Inamdar (2012) in their study of HIVinfected women with pregnancies complicated by pre-ROM indicated that regardless of conservative management, for those who were already on antiretroviral treatment at the time of pre-ROM there was no vertical transmission of HIV virus, including those who had a high viral load of >1000 copies who delivered via the caesarean section route. Modena *et al*. (2004) further implied that conservative management to be continued with pre-ROM in pregnant women who are already on life long antiretroviral treatment.

Eslamian & Asadi (2002) reported that the pandemic of HIV infection on the African continent is particularly affecting women of childbearing age who have been infected heterosexually. The authors asserted that as the HIV epidemic in Africa matures, women tend to be infected at a higher rate and younger age than men. The African continent with its high rate of teenage pregnancy and in the context that pregnancy itself is the end result of unprotected intercourse during which the HIV virus can be transmitted supports the fact. They continued that there was an increased risk of low birth weight and prematurity in infants who were exposed to HIV compared to uninfected women in Zaire.

Low birth weight and prematurity are contributory factors to cord prolapse; hence, the need for this study. It is the midwive's responsibility to promote the *Know Your Status* and spread the *Plan Your Pregnancy* message, give health education and promote

prevention, ensuring that all pregnant women are tested and test repeated as per protocol, antiretroviral therapy (ART) initiation, elimination of mother-to-child transmission, PCR testing as well as encouraging exclusive breastfeeding for 6 months and dual protection for all the mothers; hence, all of the above should be done with a non-judgemental attitude. In one large substudy by WITS Affiliated Perinatal HIV Research (https://www.wits.ac.za/health/research/research-entities/perinatal-hiv-research-unit/) on women and infants, and viral transmission assessing the relationship between length of time from membranes rupture to delivery and perinatal transmission of HIV virus, about 25% became infected if membranes were ruptured for more than 4 hours before delivery and only 14% where infected in cases where membranes ruptured for less than 4 hours. Rupture of membranes for more than 4 hours had been found accounting for a 2-fold increase in the transmission of HIV to infants. Rupture of membranes was found to have implication in a 2% increase with each hour that passes before delivery, irrespective of the mode of delivery.

2.7.2 Ruptured Membranes in Teenage Pregnancy

WHO (2010) indicated that teenage pregnancy is still a challenge contributing to the struggle to fulfil the Millennium Development Goals (MDGs) (https://www.who.int/topics/millennium development goals/en/) directly related to women's reproductive health and neonatal care. The challenge becomes worse when midwives find it difficult to monitor all these pregnancies because teenagers stay away from attending antenatal care or default the care because of shame. When the teenager is not attending antenatal care, she will miss the information on the implications of ruptured membranes and when it happens with cord prolapse she will fail to notice the urgency

of the issue and delay in seeking health leading to increased perinatal morbidity and mortality.

Magowan, Owen & Thomson (2014) indicated that due to biological immaturity and altered hormones during pregnancy, the immatured uterine cavity and cervical blood supply may result in uterine irritability which becomes susceptible to subclinical infection with an increase in the trend of prostaglandins level resulting in PROM. Teenager pregnancies are usually associated with complications, including pre-eclampsia, prolonged labour and preterm labour, PROM with poor perinatal outcomes (Padmaja & Swarupa, 2018). Mecer (2003) stated that age is a risk factor for prematurity and low birth weight and the incidence is higher where maternal age <15, a risk for prematurity and low birth weight is a risk for cord prolapse.

According to Maimbolwa *et al*. (2003), in South Africa, antenatal care education programmes focus on improving maternal care by proving Basic Antenatal Care pregnant woman must attend antenatal care at least 4 times during pregnancy. The question arises regarding educational programmes during the antenatal period with implication of pre-ruptured membranes, especially the content of educational programmes for pregnant woman.

2.7.3 Previous Pre-Term Labour

Tahir, Aleem & Aziz (2002) indicated that previous preterm delivery is a valuable predictive factor of increased risk for preterm labour with subsequent pregnancies. In a study on associated factors on cord prolapse by the Department of Obstetrics and Gynaecology in Cameroon (Nana *et al.*, 2010) out of the 47 cases studied, preterm

delivery was reported in 28% and malpresentation accounted for 68% with breech occurring in 42.5%, the risk of preterm delivery carries a greater risk of malpresentation, breech delivery precipitating the incidence of cord prolapse following PROM. PROM was found to carry a greater risk precipitating other factors.

2.7.4 Maternal Infection

Khatri & Inamdar (2012) reported that maternal infection can cause preterm labour; they emphasized that a variety of conditions have been associated with preterm labour and low birth weight, including pyelonephritis and urinary tract infections. Clinical evidence of infection manifested by the presence of causative organisms in the amniotic fluid is common in cases of preterm labour and PROM. Several authors have found an association between maternal infection and preterm delivery. Lonky & Hayashi (1988) also confirmed that maternal infection in nearly 25% of the cases preceded by ROM according to current thought, the uterine cavity can be infected by microorganisms via maternal circulation (haematogenous route) or from vagina and cervix (ascending route). The interaction between microorganisms and infected tissues can result in weakening of the placental membranes causing release of prostaglandin, sufficient to initiate labour irrespective of gestational age.

2.7.5 Dietary Influences

The influence of diet is difficult to isolate from other factors of socioeconomic background, they also indicate that poor nutrition has greater of the link with preterm delivery and that there is an association between poor nutrition and strength of membranes which correlates with premature rupture of membranes (Englund-Ogge *et al.*, 2014; Grieger, Grzeskowiak & Clifton, 2014). Women of low socio-economic

status eat less than the increased nutrients needed during pregnancy (Modena *et al.*, 2004).

Although some of the pregnant women may experience poor appetite, irrespective of low socio-economic status, cultural beliefs of avoiding certain food during pregnancy may also contribute. Khatri & Inamdar (2012) indicated that micronutrient deficiency affects collagen formation and alters collagen structure nutrients are precursors of important bioactive components, including, prostacyclin, prostaglandin and thromboxane. Amniotic cavity exposure to these eicosanoids may stimulate uterine contraction with increased risk of PROM (Sulovic, Sulovic & Relic, 2014).

2.7.6 Multiple Pregnancies

Modena *et al*. (2004) indicated that multiple births were far more likely to result in preterm delivery than singleton, which they stated was more common amongst blacks. The biochemical process of excessive uterine extension may stimulate prostaglandin leading to PROM (Challis, 2007; Li, Unlugedik, Bocking & Challis, 2007). According to Noor, Fawwad, Shahzad, Sultana & Bashir (2010), the high rate of preterm delivery was primarily caused by PROM and twin pregnancies are the direct cause of one sixth of all preterm births.

Regarding all these facts, maternal literacy on risk factors of pre-ruptured membranes is crucial so that pregnant will be aware of the risk factors and sense the need for seeking health after PROM has occurred. The Maternal Fetal Diagnostics Network in their large study on predictability of PROM observed that a short cervical length of 25 mm and positive vesico-vaginal foetal fibrogenic capacity were good indicators in

close association with parity and in the presence of known predisposing factors (http://maternalfetalnetwork.com/).

2.7.7 Chorioamnionitis

Although chorioamnionitis can occur with intact membranes, it complicates 40-70% of preterm births with PROM. Multiple studies have included prolonged PROM as the risk factor that carries a greater risk of chorioamnionitis as the polymicrobial bacteria gain entrance via the genital tract to infect membranes and the chorion of the placenta (Erdemir *et al.*, 2013). Enakpene *et al*. (2010) in their study in Nigeria on umbilical cord prolapse which is a complication of pre-ROM, noted an increase in perinatal mortality as a result of poor obstetric care and poor utilization of available health care. Inadequate, poor compliance and lack of prenatal care was found to be associated with greater risk of poor perinatal outcomes the risk was 3 times higher compared to those who received adequate antenatal care. They further indicated that women with adequate antenatal care are more likely to be alert on the danger signs during pregnancy and present early for health care while the unbooked will try for the alternative route and delay in seeking health care. Mathole *et al*. (2004) and Mogawane *et al*. (2015) have pointed that the belief in witchcraft has greatly contributed to late booking and no antenatal booking. The belief that if the pregnant women report earlier to the health care facility they will just cut and when you have delivered through caesarean section you are bewitched and not woman enough leading to fear and anxiety regarding seeking health care.

2.7.8 Clinical Presentation of Pre-Ruptured Membranes

Rupture of membranes is diagnosed by history of fluid drainage from the pregnant

woman which will be confirmed by vaginal speculum examining the cervix and vaginal cavity for pooling of fluid or leakage, it can also be diagnosed by ferning of dried fluids under microscope and also by alkalinity of nitrazine paper. According to Zareh, Abbasalizadeh, Abbasalizadeh & Mashrabi (2012), clinical presentations during pre-ruptured membranes includes history of uncontrollable sudden gush of watery fluid or watery vaginal discharge with or without pain before the time of birth. It is crucial to assess the time of PROM, colour and consistency of vaginal fluid as these will assist in diagnosing prolonged PROM (Thombre, 2014), meconium stained liquor, presence of blood in liquor of which need urgent attention and management as it may complicate into chorioamnionitis, RDS and aspiration of meconium and blood which will then lead to poor perinatal outcomes. The consistency will assist in identifying the loss of the mucus plug in early labour.

According to Peaceman *et al*. (2015), PROM is linked with underlying pathological processes most likely to be infections, and associated with low socio-economic status, low body mass index, smoking, previous preterm labour as well as cerclage. It is the leading complication of preterm deliveries. The standard management of PROM includes in-hospital admission for bed rest, prophylactic antibiotics (Mercer, 2012) for possible infections and corticosteroids administration to enhance lung maturity.

2.7.9 Complications of Pre-Ruptured Membranes

Acute complications following PROM may impair the health of an unborn baby with complications such as RDS, injuries, septicaemia, asphyxia, hypoxic ischaemic encephalopathy (HIE), intraventricular heamorrhage (IVH), necrotizing-enterocolitis (NEC), cord prolapse and emotional strain to the mother. PROM complications are

the main contributing factors in perinatal mortality and morbidity as the causes of death are either related or associated with PROM.

- RDS-cord prolapse is associated with PROM and preterm deliveries before 34 weeks of gestation due to impaired synthesis of lungs surfactants which decreases lung compliance (Mandel *et al.*, 2005).

- Serious injuries may be sustained by neonate in management of cord prolapse, including fracture of the clavicles, brachial plexus and facial paralysis (Enakpene *et al.*, 2010).

- Neonatal septicaemia and foetal exposure to infection may lead to serious infections and prolonged hospitalization, even death.

- Asphyxia with the cord compressed can cause lack of oxygen before, during or after delivery with Apgar score of 4 in 1 minute; if severe it may result to irreversible delayed cognitive development and cerebral palsy (Haddad & Saliba 2012).

- HIE presents with Apgar score of 0-3 in 1 minute caused by prolonged asphyxia insult and failure of compensatory mechanisms resulting to redistribution of blood flow to major organs, the end result will be brain injury or brain dead (Golubnitschaja, Yeghiazaryan, Cebioglu, Morelli & Herrera-Marschitz, 2011).

- IVH presents with bleeding into the fluid filled areas inside the brain commonly amongst preterm infants born 10 weeks earlier due to immature

and fragile blood vessels in the brain (https://www.achc.org/).

- NEC also common in preterm neonates, a portion of the bowel becomes ischaemic and result in tissue death of intestinal mucosa. Very little blood flow to the intestines at birth due to difficult delivery or injury to the intestinal lining (Nana *et al.*, 2010).

- Cord prolapse, According to Enakpene *et al*. (2010), the umbilicus forms a major connection between the foetus and the placenta with a crucial role of gaseous exchange, nutrient and metabolite supply between the foetus and the mother. The presence of the umbilical cord either by prolapse or presentation is a potential obstetric calamitous for the foetus causing significant concern to the mother, labour process and health care workers.

- Emotional strains following delivery with poor neonatal outcomes such as asphyxia and RDS with prolonged hospitalization and neonatal mortality with fear of further childbirth (Kamath, MacGuire, McClure, Goldenberg & Jobe, 2011).

Clearly, therefore, the complications of PROM are the cause of poor perinatal outcomes with increased rate of perinatal morbidity and mortality.

2.8 Summary

This chapter described, summarized, evaluated and clarified the current knowledge pertaining to health literacy and knowledge, health and cultural contexts, health promotion, cultural and religious aspects of health-seeking behaviour, and aetiological factors and complications associated with PROM. In the next chapter, the research

methodology will be discussed.

CHAPTER 3

RESEARCH METHODOLOGY

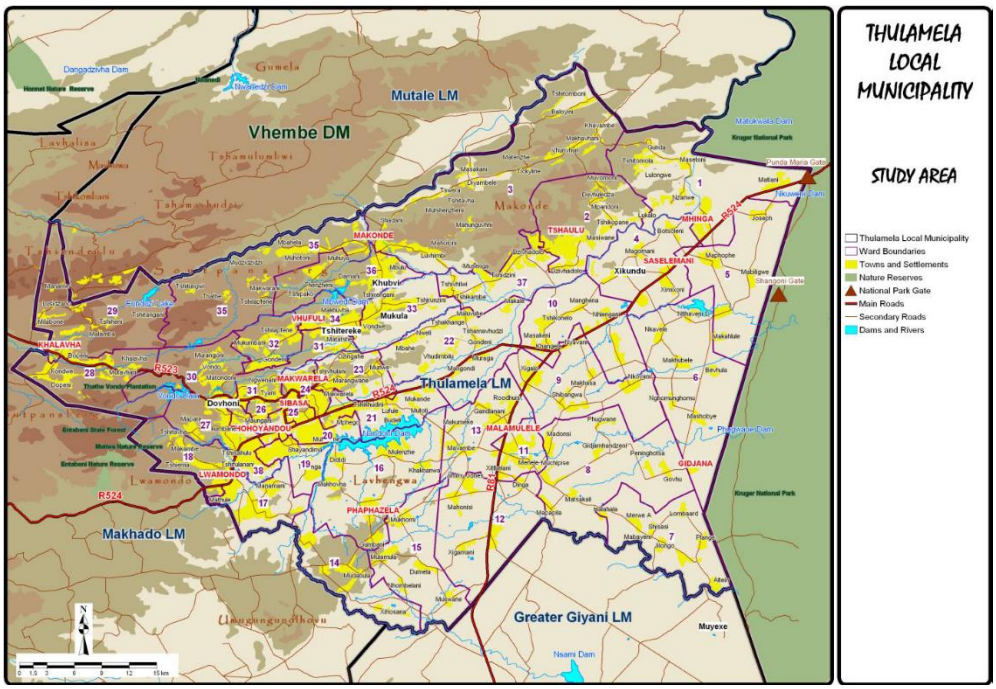
3.1 Introduction

Chapter 2 reviewed the literature related to health literacy of lactating mothers on associated factors of pre-ruptured membranes on perinatal outcomes. This chapter will discuss research methodology, including the research design, geographic area where research was conducted, population, sampling, sample size, instrument for data collection, validity and reliability of the instrument, data collection method, data analysis, ethical considerations and data dissemination.

3.2 Research Setting (

Vhembe district is a category C municipality located in the north of Limpopo Province sharing boarders with Zimbabwe, Botswana, Mozambique and North-West provinces. It is the 19th largest district with 4 local municipalities, namely: Collins Chabane, Makhado, Thulamela and Musina. The study was conducted under Thulamela sub-district which is predominated by rural areas and contains a population of 616 463. There are 2 hospitals, 3 Community Health Centres (CHCs), 49 clinics and 3 Emergency Medical Services (EMS) stations. All the CHCs are located at <10 km away from the nearby hospital. The district is dominated by Africans, mostly Venda speaking and other races <1%. Thulamela municipality has a high prevalence of teenage pregnancy, anaemia and premature rupture of membranes (PROM).

Perinatal health complications within the district include preterm labour, infections, asphyxia and respiratory distress syndrome (RDS). Cord prolapse is rare but carries a high mortality rate when it occurs. The study was conducted in 12 selected clinics under Thulamela B municipality (Figure 3.1). The clinics selected include Vhufuli-Tshitereke, William Eddie CHC, Damani clinic, Fondwe clinic, Murangoni clinic, Pfanani clinic, Dzingahe clinic, Sibasa clinic, Thohoyandou CHC, Magwedzha clinic, Shayandima clinic and Tshisaulu clinic (Figure 3.1).



Source: Htenl (2017)

Figure 3.1: Map of Limpopo Province showing the study area

3.3 Research Approach

A quantitative approach was adopted for this study, as defined by White & Millar (2014). It implies quantity or amount and information collected was in a quantified or numeric form for evidence. The researcher chose this approach considering the fact

that it is reliable and objective. In this study, quantifiable information that provides summary of data which can be used for inferences was gathered on lactating mothers regarding associated factors of pre-ruptured membranes on perinatal outcomes. There was no intervention nor treatment involved.

3.4 Research Method and Design

A quantitative research method with a cross-sectional descriptive survey was used in this study. The researcher regarded this method and design suitable based on its alignment with the research question and purpose of the study as it examines data at one point in time. Data were collected only on one occasion, but with different subjects. This design was found useful in obtaining the overall picture of the study over time. The design was also chosen to meet the study objective of assessing the health literacy of lactating mothers regarding associated factors of ruptured membranes on perinatal outcomes at Thulamela municipality. The outcome includes the description of concepts, possible identification of relationship between concepts.

3.5 Population

Population is a set of entities in which all the measurements of interest to the researcher are presented (Polit & Hungler, 2013). The population comprised of lactating mothers who presented at the health facility within 6 weeks following delivery in the selected 12 clinics at Thulamela municipality.

3.6 Sampling Method

Sampling is a process of selecting the sample from a population in order to obtain information regarding a phenomenon in a way that represents the population of

interest (Polit & Hungler, 2013). In this study, sampling was done in 2 phases namely: sampling of health facilities and sampling of respondents.

3.6.1 Sampling of Health Facilities

Thulamela district municipality has 37 clinics in total and 12 clinics were selected from the total (Table 3.1). The researcher purposively selected 12 clinics in total under Thulamela B municipality, 6 clinics referring to Donald Fraser Hospital and 6 clinics referring to Tshilidzini Hospital because of the high number of postnatal follow-up monthly statistics as compared to other clinics and they are within the researcher's reach.

Table 3.1: Selected clinics and monthly statistics

Name of the health facility		Number of 2- & 6-week visits
1.	Vhufuli-Tshitereke Clinic	30
2.	William Eddie Health Care Centre	30
3.	Damani Clinic	10
4.	Dzigahe Clinic	10
5.	Fondwe Clinic	10
6.	Murangoni Clinic	10
7.	Pfananani Clinic	20
8.	Sibasa Clinic	20
9.	Thohoyandou Health Care Centre	30
10.	Magwedzha Clinic	10
11.	Shayandima Clinic	15
12.	Tshisaulu Clinic	15
Grand Total		**210**

3.6.2 Sampling of Respondents

Total population sampling was used to sample 210 respondents from the 12 selected clinics. This method of sampling was used because the population size is limited and

selected respondents have uncommon characteristics, they are lactating mothers who are within 6 weeks following delivery. A total of 210 lactating mothers who gave birth within 6 weeks, irrespective of mode of delivery were purposively selected from the 12 selected clinics.

3.6.3 Sample Size

According to Polit & Hungler (2013), the population size needs to represent the population. In this study, the sample size comprised a total of 210 respondents which included the total population.

3.6.4 Inclusion Criteria

The inclusion criteria incorporated all lactating mothers who have delivered a live baby, either via normal vaginal route or through caesarean section within 6 weeks following delivery. This included lactating mothers at 3 days check-up, 2 weeks and 6 weeks follow-up visits from selected clinics provided they gave consent to participate. The criteria included lactating mothers at 3 days visit for those who delivered via the normal vaginal route, 2 weeks follow-up visit, and 6 weeks follow-up immunization included those who delivered through caesarean section.

3.7 Measuring Instrument

Questionnaires were used to measure variables and information of interest. The questionnaire was comprised of closed-ended questions because they increase the reliability of the responses and bias is reduced, and are easy to code and interpret. The questionnaire was a self-developed and self-administered and health screening tool by Chew *et al*. (2004) was also utilised, however, the researcher was available to

assist when the need arises. The questionnaire was compiled in English. It consists of the following four sections (Appendix H):

A. Socio-Demographic Data
B. Factors Associated With Pre-Ruptured Membranes And Fluid Leakage
C. Cultural Practices and Beliefs
D. Health-Seeking pattern and perinatal outcomes

3.8 Plan for Data Collection

Borbasi & Jackson (2012) indicated that data collection subsists in the use of a variety of methods and techniques of data collection in a single study. After the researcher has obtained the permission to access the health facilities from Limpopo Department of Health (Appendixes B and C), appointments were secured with the facility managers (Appendixes D and E) to decide on the suitable time and place or data collection. Information letters (Appendix F) and consent forms (Appendix G) were signed prior to handing over of questionnaires (Appendix H) to lactating mothers and Data were collected the same day using English and clarified in Tshivenda by the researcher.

Data were collected by the researcher for three months on arranged times to prevent disruption of daily routines. Data collection about health literacy of lactating mothers on associated factors of pre-ROM on perinatal outcomes were collected by means of self-administered questionnaires. Data were collected from January to March 2019 from 12 selected clinics. The questionnaires were compiled in English. Respondents completed questionnaires on their own, however, the researcher was available when

assistance was needed.

3.9 Data Management and Analysis

The aim of Data Management and Analysis was to discuss steps and procedures that would be followed to interpret and analyze obtained data. The findings that emerged in the analysis formed a basis for generalization and recommendations that were made based on the findings of the study. The facts gathered from questionnaires were translated into numerical data, graphs and tabular format so that facts would be clear and items scores were added to obtain the final results. The Statistical Software Package (SPSS) version 25 was used to analyze data. All data were coded and entered into the software programme. Codes were used instead of participants' names and data were checked frequently for missing or incorrect values.

3.10 Validity and Reliability of the Instrument

The validity and reliability of the research instrument are important to provide solid data for research purpose.

3.10.1 Reliability

Reliability is defined as the accuracy or precision of an instrument in the degree of consistency or agreement between two independently derived sets of scores, and the extent to which independent administration of the same instrument would yield the same result under comparable conditions (Brink, Van der Walt & Van Rensburg, 2012). Reliability in this study was ensured by the test-retest method by pre-testing the instrument at Thohoyandou Health Care Centre on 21 respondents who were not part of the study. The instrument was administered in one occasion with different

respondents in order to make comparison of results to determine if the results have not changed between the two tests after conducting the test-retest method, then the measure was regarded reliable. This was done to investigate the feasibility of the study and unclear instructions and wording.

3.10.2 Validity

According to Brink *et al*. (2012), content validity of an instrument is concerned with whether the major themes of the study are measured. To ensure face validity, the supervisor, co-supervisor and research committee evaluated the questionnaire for legibility and assist where necessary. This was done to determine the suitability of a given instrument as a source of data on the respondents under investigation. The instrument was checked whether it contained the relevant items to be measured, it provided instructions and headings guiding the respondents.

Content validity was assured by questions that reflected the research issue to make sure that no related respondents are excluded. This was ensured by covering components on important aspects of health literacy. Questionnaires were constructed after extensive literature review on associated factors of pre-ruptured membranes and the tools that were used in the studies with similar interest with this study. A panel of experts including midwives, supervisors, and lecturers were consulted for supervision.

3.11 Pre-Testing the Instrument

Questionnaires were checked to ensure that they are working as intended and that they are clearly understood by respondents who are likely to respond to them (Hilton, 2017). This has assisted in identifying questions that were not clearly understood by

respondents or any problem with questions that needed to be rephrased to prevent bias. The researcher pre-tested the instrument at Thohoyandou Health Centre on a small sample of 21 lactating mothers which comprised 10% of the total population. This site was chosen because Thohoyandou Health Centre is closer to where the researcher resides and there would be no transport costs.

3.12 Ethical Considerations

The proposal has gone through the School of Health Sciences Higher Degree Committee of UNIVEN and it was sent to the Ethics Committee for quality ethical clearance (Appendix A). After being approved by Ethical Committee, a letter seeking permission for conducting the study was submitted to the Limpopo Department of Health (Appendix B) and a letter of approval (Appendix C) was then submitted to Vhembe District, Department of Health (Appendixes D and E). Appointment was made with the facility managers to explain the purpose as well as requesting permission to conduct the study.

3.12.1 Right to Self-Determination

Respondents were informed that participation was voluntary (Appendix G), and they had the right to participate in the study or not without the risk of penalty or prejudicial treatment, and that they had the right to withdraw from participation at any given time. The researcher did not manipulate or use force on respondents for them to participate. Explanation of research details was done (Appendix F). The researcher answered any question that respondents have asked regarding the study.

3.12.2 Informed Consent

Consent was in a written form with explanation on the type of information needed from the respondents and the researcher provided the name and number of contact person in case respondents may need further explanation (Appendixes F and G). Information regarding participation was clear and concise at the level of respondents' understanding. Consent was only obtained when respondents have shown clear understanding on what is expected from them and it was an ongoing process as unexpected events may occur.

3.12.3 Confidentiality

Confidentiality was maintained by ensuring that names of respondents were not written down to keep the respondents' identities secret and information could not be linked back to the respondents. Coding was used to identify clinics. Agreement with the respondents was respected by being punctual for interviews and not sharing their private information without their knowledge or against their will.

3.12.4 Prevention from Harm

Questions were carefully structured, and respondents monitored for any sign of distress; where it has occurred, the researcher facilitated debriefing by giving participants opportunity to ask questions, taking a break and even referring them for counselling when necessary.

3.12.5 Right to Privacy

Leedey & Ormrod (Leedy, 2013) stated that any research involving human beings should respect the respondents' rights to privacy. In this study, this was ensured by

research report either oral or written and presented in such a way that it cannot be linked to a particular respondent. Generally, the researcher kept the nature and quality of respondents' performance strictly confidential.

3.12.6 Right to Fair Treatment

The researcher selected respondents with fairness only for the reasons related to the study problem—the choice on respondents was not motivated by desire for the respondents to receive specific benefits that the study might offer. All respondents were treated fairly and the researcher was always punctual and has terminated the process at the agreed time. The potential risks include loss of time, loss of privacy as well as psychological and emotional distress. Depending on the emotional state, respondents were referred for counselling.

3.12.7 Professional Honesty

The researcher complied with professional honesty by analyzing and reporting findings provided in the questionnaires in a complete and honest manner without misrepresenting what has been done or intentionally misleading others about the nature of the findings. Under no circumstance did the researcher fabricate data to support a particular conclusion, no matter how seemingly noble the conclusion may be.

3.13 Summary

A descriptive, cross-sectional quantitative method was used to assess the health literacy of lactating mothers on associated factors of pre-ruptured membranes on perinatal outcomes in Thulamela B clinics, Limpopo Province, South Africa. The study

population was comprised of 210 lactating mothers within 6 weeks following delivery from the 12 selected clinics. Total population sampling was used to ensure that all lactating mothers had an equal chance of inclusion in the study. Respondents were purposively selected from each of the 12 selected clinics. Questionnaires were used to collect data from lactating mothers in selected clinics. Data were collected by the researcher with the aid of a contact person in distribution of questionnaires to ensure privacy and confidentiality. Analysis and interpretation of data will be presented in the form of tables and graphs. Recommendations were made based on the findings of the study. The next chapter will include the study results and the interpretation thereof.

CHAPTER 4

PRESENTATION AND INTERPRETATION OF THE RESULTS

4.1 Introduction

The previous chapter entailed the research methodology, which included the research design, geographic area of study, population, sampling and sample size, instrument for data collection, validity and reliability of the instrument, data collection method, plan for data analysis, ethical considerations and plan for data dissemination. This chapter presents the results and interpretation of the findings based on the analyzed data. The findings are presented in the form of frequencies and percentages.

The response rate was 100% with all projected 210 respondents successfully agreeing to take part in the study. The socio-demographic variables of the respondents, i.e., delivery history, decision regarding health care, pregnancy frequency, antenatal attendance frequency, reasons for those who were not booked, sicknesses during pregnancy, health information received during pregnancy, fluid leakage prevalence, knowledge of mothers on fluid leakage, health information they wish to ask, accessibility of health information and understanding, cultural practices and beliefs related to fluid leakage, action of respondents in the event of fluid leakage, respondents' understanding on causes of fluid leakage, health-seeking patterns and perinatal outcomes during fluid leakage, lessons learnt from fluid leakage experience will be included in the discussion of the study results.

4.2 Socio-Demography of the Respondents

This section outlines the distribution of the respondents by age, marital status, religion, level of education, ethnicity and occupation. Table 4.1 shows that the majority (n=175; 83.3%) of the respondents were Christian. From the majority (n=192; 91.4%) Venda ethnicity group, however, some were Tsonga (n=6; 2.9%) and Pedi (n=12; 5.7%).

The majority of respondents were single mothers (n=130; 61.9%), whereas some were married (n=52; 24.8%) and others divorced (n=28; 18.3%). The study further showed that majority of respondents were mothers aged between 21-25 years (n=106; 50.5%) while those 20 years and below accounted for 15.2% (n=32) and the age categories of 26-30 years and 36-40 years shared a similar representation distribution (n=24; 14.3%). Mothers in the 31-35 years age group represented the lowest count (n=18; 8.6%).

The majority of the respondents of this study were unemployed (n=14; 67.1%), some were employed (n=16; 7.6%) while the remainder were students (n=23; 11%). The same proportion of single mothers (n=130; 61.9%) who took part in this study had only managed to reach primary school (n=64; 30.5%) and secondary school (n=64; 30.5%). Of the respondents, 19% (n=40) reached a tertiary level of education whereas 1.4% (n=3) have a postgraduate qualification. However, 18.6 % (n=39) never had formal schooling. Given that the respondents have partners, being married or single, the study showed that a larger percentage of partners were not educated, as revealed that 81.9% (n=172) had never attended school and the remaining percentages are distributed only across primary (n=12; 5.7%), secondary (n=11; 5.2%) and tertiary (n=15; 7.1%) levels of education.

Table 4.1: Demographic information of the respondents

Characteristics	Frequency (n)	Percentage (%)
Age (Years)		
≤20	32	15.2
21-25	106	50.5
26-30	24	11.4
31-35	18	8.6
36-40	24	11.4
Ethnicity		
Pedi	12	5.7
Venda	192	91.4
Marital Status		
Single	130	61.9
Married	52	24.8
Divorced	28	18.3
Occupation		
Student	23	11.0
Employed	16	7.6
Unemployed	141	67.1
Highest Level of Education (Wife)		
Primary Level	64	30.5
Secondary Level	64	30.5
Tertiary Level	40	19.0
Postgraduate	3	1.4
Never Attended School	39	18.6
Highest Level of Education (Partner)		
Primary Level	12	5.7
Secondary Level	11	5.2
Tertiary Level	15	7.1
Never Attended School	172	81.9
Total	**210**	**100**

4.3 Accessibility of Health Information and Education

Table 4.2 shows the pattern of health knowledge, accessibility and understanding by respondents who participated in this study. The questions were composed of basic access to health knowledge and were being assessed using 14 questions with *Yes* and *No* responses. The results show that the majority of respondents (n=133; 63%) found it difficult to understand the health information, however, 36.7% (n=77) agreed to have an understanding on the health information either written or taught. The majority of respondents (n=181; 86.2%) agreed that health information is important, whereas 52.9% (n=111) found that health educational materials are difficult to understand. Similarly, 83.3% (n=175) of the respondents found clinic signs difficult to understand. Misunderstanding between respondents and nurses was prevalent and has callused many respondents to miss their check-up (n=197; 93.8%). Not only was misunderstanding a cause for missed check-ups, failure to keep check updates was noticed as contributory factor as 81% (n=170) have indicated that they did not keep an appointment of follow-up or check-up due to misunderstanding.

The misunderstanding between patients and nurses was further described as something that goes far as the interpretation of findings by the nurse, 77.6% (n=163) of respondents noted that the health care worker did not explain the findings after checking them, i.e., their progress and feedback on findings in a way that is understandable. However, of the repondents 75.2% (n=158) clearly understood the instruction on how to take their medication. The majority of the repondents (n=128; 61%) indicated that they were able to give feedback to family members at home what the nurse told them about their pregnancy.

Table 4.2: Health information access and understanding

Statement	Response Rate			
	Yes		No	
	N	%	n	%
Do you have problems understanding health information which is written or that is being taught?	133	63	77	36.7
Do you find health information important?	181	86.2	29	13.8
Are the health educational materials at your clinic e.g. posters written in a way that you can understand?	99	47.1	111	52.9
Do you find hospital or clinic signs difficult to understand?	35	16.7	175	83.3
Do you keep the follow up dates for check-up?	40	19	170	81
Have you ever missed a follow up or check-up date due to misunderstanding?	197	93.8	13	6.2
Do you clearly understand the instruction on how to take the medication if given any	158	75.2	52	24.8
Did your health care provider [nurse] explains the findings and progress in a way that you would understand?	47	22.4	163	77.6
Are you able to explain to someone at home on the things that the nurse told you about your pregnancy?	128	61	82	39
Do you have anyone helping you at home in reading hospitals materials such as clinic card?	182	86.7	28	13.3
Do you often ask the nurse questions about pregnancy and health in general?	104	49.5	106	50.5
Do you seek health advice from any person besides health professionals?	107	51	103	49
Do you have preference on medical advice?	152	72.4	58	27.6
Have you ever used self-medication while pregnant?	185	88.1	25	11.6

Most of the repondents (n=182; 86.7%) received assistance at home with reading of their clinical cards and interpreting hospital information. An equal proportion of repondents replied *Yes* (n=104; 49.5%) or *No* (n=106; 50.5%) to the question whether they sought information from nurses about pregnancy and health in general. The study revealed that most repondents had a preference for medical advice (n=152; 72.4%) and sought health care advice from other people besides health care workers 51% (n=107) which then influenced 88.1% (n=185) to use self-medication while pregnant.

4.4 Antenatal Care Attendance

Tables 4.3 and 4.4 revealed that 35.7% (n=75) of respondents attended antenatal care for more than four times, followed by 28.1% (n=59) of those who attended one to three times and 4.3% who did not attend at all. Furthermore, the study found that late booking (n=23; 10.9%) and not booking at all (n=20; 9.5%) were still challenges (Table 4.4).

Table 4.3: Antenatal care frequency

Number of Visits	Frequency (n)	Percentage (%)
Did not attend at all	9	4.3
1-3 times	59	28.1
4-6 times	75	35.7
Above 6 times	67	31.9
Total	**210**	**100**

The study also shown that 7.1% of the respondents had a history of still birth while the majority (91%) experienced none and four respondents did not respond. As shown in Table 4.5, high blood pressure was found to be a prevalent sickness experienced by

many participants (n=144; 68.6%) followed by diabetes (n=23; 11%). However, 14.3% (n=30) showed no history of sickness during pregnancy.

Table 4.4: Gestational age at booking

Gestational Age at Booking	Frequency (n)	Percentage (%)
0-3 months	123	58.6
4-6 months	44	20.9
6 months and above	23	11.0
None	20	9.5
Total	**210**	

Table 4.5: Medical history during pregnancy

Type of Sickness	Frequency (n)	Percentage (%)
None	30	14.3
High blood pressure	144	68.6
Diabetes	23	11.0
Non-respondents	13	6.2
Total	**210**	**100.0**

4.5 Pregnancy Frequency and Number of Babies

Table 4.6 shows the pregnancy frequency and number of babies reported by the repondents. As indicated, the majority (n=82; 39%) of the mothers have been pregnant once with 16% (n=34) pregnant twice, 28% (n=59) pregnant 3 times and those who were pregnant four times or more accounted for 17% (n=36). Amongst the respondents the majority (n=194;92.4%) revealed that they have attended antenatal care whereas 7.6%(n=16) did not attend antenatal care.

Table 4.6: Pregnancy frequency and number of babies

How many times have you been pregnant?	Once	Twice	3 Times	4 and Above
Frequency (n)	82	34	59	36
Percentage (%)	39	16	28	17
How many babies do you have	**One**	**Two**	**Three**	**4 and Above**
Frequency (n)	82	90	17	21
Percentage (%)	39	43	8	10

4.6 Health Information That Respondents Were Willing to Ask Health Care Workers

The majority of respondents revealed that information pertaining to diet during pregnancy is more crucial together with the information regarding dangers during pregnancy. Respondents were more interested in asking about general wellness of the baby and how to take care of the baby was also considered a topic of concern, however few respondents attested that that are shy to ask anything. Table 4.7 summarizes the repondents;' preference on health information.

Table 4.7: Respondents' preference on health information

Health subjects to be taught	Frequency (n)	Percentage (%)
Wellness of the baby	32	15.2
Diet for pregnancy	70	33.3
How to take care of the baby	25	11.9
What is dangerous during pregnancy	66	31.4
I am shy to ask about anything	17	8.1
Total	**210**	**100.0**

4.7 Health Information Received During Pregnancy

Table 4.8 shows that the majority of the respondents (n=121; 57.6%) did not receive regular health education from health care providers; only a small percentage (n=89; 42.4%) attested that they have received health information. Most respondents obtained health information about family planning (n=37; 17.6%), with minimal attention given to breastfeeding (8.6%) and health diet (n=18; 8.1%). However, information on danger signs of pregnancy (n=4; 1.9%) and fluid leakage (n=13; 6.2%) had been low which majority of respondents agreed to have a greater impact on the poor perinatal outcome.

Table 4.8: Health information received during pregnancy

Information	Frequency (n)	Percentage (%)
Family Planning	37	17.6
Breastfeeding	18	8.6
Health diet	17	8.1
Danger signs of pregnancy	4	1.9
Fluid leakage	13	6.2

4.8 Delivery History of the Participants

Table 4.9 summarizes the history of the respondents in relation to pregnancy and giving birth. Given that people give birth at different facilities, the study proved that the majority of mothers in the study delivered their last baby at a hospital (n=182; 86.7%), only a few delivered at the church (n=9; 4.3%) and home (n=19; 9%), respectively. Out of 210 respondents, their modes of delivery were spread across vaginal delivery (n=78; 37.1%), caesarean section (n=64; 30.5%) and aided vaginal delivery (n=78; 32.4%).

Table 4.9: Delivery history of the participants

Delivery Facility	Frequency (n)	Percentage (%)
Hospital	182	86.7
Church	9	4.3
Home	19	9
Mode of Delivery	**Frequency (n)**	**Percentage (%)**
Vaginal	78	37.1
Caesarean	64	30.5
Aided vaginal delivery	78	32.4

4.9 Knowledge Regarding Pregnancy and Fluid Leakage

The study respondents demonstrated their knowledge of pregnancy and the growing of an unborn in the womb and shows that most (n=141; 67.1%) attested that they think there is a pool of water in where the baby grows, however the (n=69; 32.9%) supported that they don't know if there is pool of water in their tummy during pregnancy. The study showed that the respondents are knowledgeable about the place where the unborn baby grows. A high number of respondents (n=197; 93.8%) indicated that they were willing to ask for more health information which is related to pregnancy.

A considerable number of respondents used medicine which is not from the clinic which supported the results that the clinic and chemist are the two major health service providers, only (n=49; 23.3%) have ever heard of fluid leakage during pregnancy with the majority (n=161; 76.7%) who have never heard of fluid leakage during pregnancy. The health workers (n=156; 74.3%) and Mom Connect messages (n=54; 25.7%) were regarded as the source of information regarding fluid leakage.

As shown in Table 4.10, the study proved that a larger number of respondents (n=109; 51.9%) agreed that fluid leakage before delivery can happen to anyone while 18.6% (n=39) agreed that it will happen to those who don't perform traditional practice, while 29.5% (n=62) revealed that it cannot happened to anyone. The level of understating is better pertaining the signs and symptoms and the majority (n=138; 65.7 %) indicated draining of dirty water and the minority (n=72; 34.3%) indicated draining water with or without pain. The respondents proved that they were much afraid of pain (n=168; 80%) during pregnancy and fluid leakage (n=42; 20%) was revealed to be a minor fear.

The respondents indicated that the fluid leakage is dangerous to both the mother and the baby (n=175; 83.3%), however, a small percentage argued that its dangerous to the mother (n=35; 16.7%) only. Respondents in this study indicated that if fluid leakage happens before time and not treated either the mother (n=50; 23.8%) or baby (n=67; 31.9%) will become sick, whereas 35.7% (n=75) indicated that both mother and baby will be affected, while 8.6% (n=18) supported the notion that nothing will happen. The study revealed that respondents were reluctant to go to hospital when fluid leakage occurred before time, many of them said that they would wait for someone at home and ask (n=80; 38.1%) and others said they would drink water to replace it (n=83; 39.5%), while a small group spoke of hospital (n=27; 12.9%) and traditional medicine (n=20; 9.5%) respectively. Apart from the respondents' reluctance to seek medical attention fast, they really knew that the best treatment for fluid leakage is clinic/hospital, however, water from a pastor (n=58; 27.6%) or traditional healer (n=38; 18.1%). However the effect of leakage fluid to the baby only was revealed as a baby born before time (n=74; 35.2%), sickness (n=47; 22.4%) and death (n=32; 15.2%).

Table 4.10: Knowledge regarding fluid leakage

Who can experience fluid leakage?	Frequency (n)	Percentage (%)
Anyone	109	51.9
Those omits tradition	39	18.6
No one	62	29.5
What are the signs of fluid leakage		
Draining water with or without pain	72	34.3
Draining dirty water	138	65.7
What did you fear during pregnancy before the time of birth		
Pains	168	80.0
Fluid leakage	42	20.0
Fluid leakage is dangerous to:		
The mother	35	16.7
Both the mother and the baby	175	83.3
What happens if fluid leakage before time is not treated		
Mother will become sick	50	23.8
Baby will become sick	67	31.9
Both mother and baby will be affected	75	35.7
Nothing serious will happen	18	8.6
What do you if fluid leakage before time		
Will drink a lot of water to replace fluid	83	39.5
Will quickly go to hospital or clinic	27	12.9
Will sit at home waiting for someone that I will ask	80	38.1
Will quickly go to the traditional healer for medicines to stop leakage	20	9.5
What do you think is the best treatment for fluid leakage		
Clinic/hospital	84	40.0
Water from the pastor	58	27.6
Herbs from traditional healer	38	18.1
All of the above	30	14.3
The effect of before time fluid leakage to the baby		
Baby born before time	74	35.2
Sickness	47	22.4
Death	32	15.2
All of the above	32	15.2
None of the above	25	11.9

4.10 Fluid Leakage Prevalence

Out of the 210 respondents who took part in the study, the majority (n=133; 63.3%) indicated a high prevalence of amniotic fluid leakage before giving birth. Reasons for visiting the clinic were outlined and the majority revealed that they visited the facility for their appointment date and follow-up check-up with health care workers. Of the repondents, 25.35% (n=53) and 27.6% (n=58) came to the facility for their first check-up and for the baby injections, respectively. However, the other 12.9% (n=27) did not indicate their reason for the visit. In terms of distance travelled by the participants to the clinic, 73.3% (n=154) agreed that they travelled less than I hour and 26.7% (n=56) travelled for two-hours and more to the public health centre (PHC) facility.

4.11 Actions Respondents Will Take in the Event of Amniotic Fluid Leakage

This section describes the actions of respondents in the event of amniotic fluid leakage during pregnancy. The study revealed that when it happens they went to report to the clinics and to the partner (n=82; 39%), nurse (n=61; 29%) and relative (n=66; 31.4%), while one suggested that she would tell the pastor or the family traditional healer.

Figure 4.1 shows that most of the respondents (n=128; 61%) indicated that if fluid leakage happened, they would report it as soon as possible, while others suggested that they would report in a few hours or go to clinic if it does not stop (n=105; 50%). A considerable number of respondents (n=111; 53%) said they would not do anything (i.e., never report to the clinic), while 27% (n=57) would first wait for the pain and others would wait for a day or more (n=40; 19%). The majority of respondents were knowledgeable about the fact that the fluid leakage can happen months before birth, however, 42.4% (n=89) confirmed that they didn't know if it can happen months before

birth. However, checking their experiences during pregnancy, fluid leakage wasn't regarded as dangerous to them as respondents revealed that bleeding (n=192; 91.4%) is most dangerous sign while 8.6% (n=18) condemned pains. The respondents' knowledge regarding the causes of fluid leakage is not enough as cultural beliefs and misfortune (n=27; 12.9%) and curse (n=89; 42.4%) were the most chosen responses, however, natural processes (n=28; 13.3%) and infection (n=66; 31.4%) were reasons below half of the response rate.

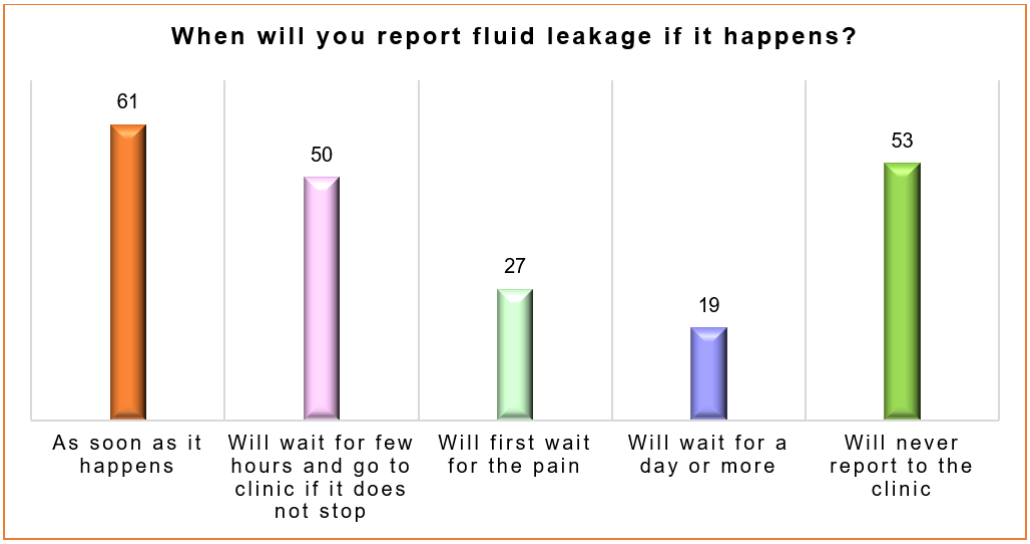


Figure 4.1: Actions respondents will take in the event of amniotic fluid leakage

4.12 Respondents' Decisions Regarding Health Care

The majority of respondents (n=117; 55.7%) indicated that they had a say in decision-making regarding health care services with 17.6% (n=37) relying on their husband's decision and 26.7% (n=56) on an older family member. The study findings indicate that the majority of respondents (n=153; 72.9%) and their partners relied on puiblic transport, with a considereable few owning cars (n=19; 9%).

4.13 Cultural Practices During Pregnancy

The majority of the respondents (n=123; 58.6%) indicated that they followed some dietary and cultural practices during pregnancy. The respondents showed that clinics (n=177; 84.3%) were the major service providers followed by pharmacies (n=33; 15.7%). Table 4.11 summarizes the repondents' responses on cultural practices.

4.14 Who Respondents' Prefer to Tell First When They Are Sick During Pregnancy

Table 4.12 shows whom respondents preferred to tell first when sick. The majority of respondents tell a family member (n=124; 59%) when they are sick with few suggesting friend (n=21; 10%), nurse (n=14; 6.7%) and partner (n=26; 12.4%), while some would tell others (n=25; 11.9%).

4.15 Health-Seeking Pattern and Perinatal Outcomes Following Fluid Leakage

Table 4.13 shows the health-seeking behaviour of respondents regarding fluid leakage. The majority (n=133; 63.3%) of the respondents has only heard of fluid leakage before time and 37.6% (n=77) agreed that they experienced it before time. For the ones who experienced fluid leakage before time the majority (n=108; 51.4%) attested that it happened a week before giving birth, while others indicated it was hours (n=26; 12.4%), few minutes (n=24; 11.4%) and days (n=23; 11%) before actual birth. After it happened many of them did not do anything thinking it wasn't serious (n=119; 56.7%), some just informed a person at home (n=36; 17.1%) and few consulted the clinic (n=26; 12.4%). Of the repondents, 66.6% (n=140) waited for hours while 15.7% (n=33) waited for days and 17.6% (n=37) did not go to the clinic after it had happened. When it happened, many of the participants were scared (n=87; 41.4%) and anxious

Table 4.11: Cultural practices of respondents

Statement	Response Rate			
	Yes		No	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Did you use certain medicines during pregnancy which are not from the clinic?	110	52.4	100	47.6
Do you avoid certain food during pregnancy not because they make you feel sick?	104	49.5	106	50.5
Do you attend the cultural practices in your area or in neighbourhood?	126	60	84	40
Have you ever heard of amniotic fluid leakage during pregnancy	49	23.3	161	76.7

Average response rates: Yes = 46.4% and No = 53.7%

Table 4.12: Whom do you tell first when you are sick during pregnancy

Family member	59% (n=124)
Partner	12.4% (n=26)
Friend	10% (n=21)
Nurse	6.7% (n=14)
Other	11.9% (n=25)

Table 4.13: Health-seeking pattern and outcome following fluid leakage

Have you ever experienced or heard of fluid leakage before time?	**Frequency (n)**	**Percentage (%)**
Have heard of it	133	63.3
Experienced it	77	37.6
Which step did you take when it happened?		
Tell someone at home for advice	36	17.1
Rush to the clinic	26	12.4
Consult with the healer	29	13.8
Didn't think it's serious	119	56.7
How long did you wait before going to clinic?		
Hours	140	66.6
Days	33	15.7
Didn't know what was happening, did not go to clinic	37	17.6
How long did the water come out before you give birth?		
A week	108	51.4
Days	23	11
Hours	26	12.4
Few minutes	24	11.4

Continued/…

What services were you offered at the clinic?		
Was admitted	25	11.9
Baby delivered same time	130	61.9
Was done operation quickly	55	26.2
What happens after you were admitted?		
Was admitted sick for days	25	11.9
Baby delivered same time	130	61.9
Was done operation quickly	55	26.2
What happens to the baby after you give birth?		
Baby was alive and healthy	28	13.3
Baby was sick and admitted	133	63.3
Baby didn't survive	49	23.3
How were you feeling afterwards?		
Relieved	94	44.8
Anxious	26	12.4
Sad	7	3.3
Emotional	83	39.5
How do you describe the care you have received?		
Good	100	47.6
Better	10	4.8
Not what you expected	45	21.4
Nothing was done	55	26.2
How was the baby's health after delivery?		
Baby born before time	59	28.1
Baby born in time and healthy	26	12.4
Baby born in time but not healthy	125	59.5

(n=33; 15.7%) while a few (n=37; 17.6%) didn't know what was actually happening with them. Of the respondents who went to the clinic, most (n=130; 61.9%) of them manage to deliver at the same time and 26.2% (n=55) had an operation quickly. Most of the repondents 63.3% (n=133) had their babies born sick and were admitted, while 13.3% (n=28) gave birth to healthy babies, whereas 23.3% (n=49) revealed that their babies didn't survive. The majority of these respondents were very emotional (n=83; 39.5%), sad (n=7; 3.3%) and anxious (n=26; 12.4%), while only 44.8% (n=94) felt relieved. The services offered was labelled by the repondents as good (n=100; 47.6%), better (n=10; 4.8%), while some indicated that it was nothing what they expected (n=45; 21.4%) and others pointed out that nothing was done (n=55; 26.2%).

4.16 Lessons Learnt from Experiencing Fluid Leakage

The study established that the majority of respondents feared that they could lose the baby (n=148; 70.5%) as well as losing their own lives (n=27; 12.9%), while 16.7% (n=35) feared losing both lives. However, as shown on Table 4.14, the majority respondents have learnt that it was crucial to rush to the clinic (n=98; 46.7%) and that any fluid leakage could be dangerous (n=58; 27.6%), while others regarded it as nothing serious (n=54; 25.7%).

Table 4.14: Lesson learnt about fluid leakage

Lessons learnt about fluid leakage	Frequency (n)	Percentage (%)
To rush to clinic when it happens	98	46.7
Any fluid leakage can be dangerous	58	27.6
Never take fluid leakage more seriously	54	25.7
Total	210	100.0

Lastly the study revealed that if respondents would know much better about fluid leakage they would have been be in a different position given 83.3% (n=175) who said *Yes* they needed more information against 16.7 % (n=35) who maintained *No*.

4.17 Discussion of the Findings

4.17.1 Socio-Demographic Data

The results of the study have shown a high rate of unemployment at 67.1% which is in accord with the findings by Vhembe DHIS indicating Thulamela district to have a high rate of unemployment and poverty even though the study did not include the whole of Thulamela. Sentel *et al*. (2018) and Stats SA (2012) have shown that there is a high rate of low adult literacy level and that literacy skills affect health literacy in general, supporting the finding of this study that despite the free education nowadays, the majority of respondents managed to reach primary and secondary education level with only 18.6 % with tertiary level education. This indicates a large number of school dropouts and those who have never attended school contribute to the low rate of adult literacy level which is also in accord with the findings by Vhembe DHIS indicating Limpopo Province to have the lowest adult literacy level.

Although the education indicators have shown that females were more likely to finish school, the findings of this study were different as they were based exclusively on females, 18.6% of whom had managed to reach tertiary level. Moreover, Yee, Niznik & Simon (2016) indicated that the limited body of work on health literacy during pregnancy have so far shown inadequate health literacy to be related to lesser knowledge and lesser self-care behaviour amongst pregnant women in the United States. Charoghchian Khorasani *et al*. (2018) demonstrated a significant correlation

between health literacy and the mother' as well as the partner's educational level, thus supporting the findings of this study as only 18.6% of respondents managed to reach tertiary level of education with 7.1% of the respondents' partners who managed to reach tertiary level and, hence, it affects the literacy level in general. In this study, the low literacy level of the respondents and their partners has contributed to limited health literacy on pre-ROM which negatively affected the perinatal outcomes.

4.17.2 Accessibility of Health Information

Ramshardt's (2011) study in America has indicated that one in five adults were likely to have inability in reading basic instructions and that nearly half of adults had difficulty in accessing, understanding and using the health information which supports the findings of this study, though it was done at a smaller scale, i.e., 52.9% of respondents have shown difficulty in accessing health information materials and understanding them, this is in relation with low adult literacy in general.

Recent studies by Saif *et al*. (2018) and Junod Perron *et al*. (2010) showed that the rates of missed appointments may be related to health system specifically and attributable to a wide assortment of factors, including forgetfulness, feeling better or worse, transport problems and misunderstanding or confusion about the time of consultation. These does not only impede appropriate care of acute and chronic health conditions, but also burden medical and administrative resources. The findings of the present study are in accord with these assertions in that 93.8% of the respondents have indicated to have also missed an appointment during pregnancy due to misunderstanding and, hence, this is reflected in different ways from poor antenatal care attendance to defaulters on antenatal care follow-up. Inadequate access to

health information has led to misunderstanding and inability to use the health information resulting in poor antenatal attendance and defaulters making it difficult to entrench maternal literacy on PROM and associated factors, with failure of identifying the respondents who are at risk of PROM when there is no frequent antenatal care attendance which will then affect the perinatal outcomes.

4.17.3 Health Literacy During Pregnancy

A total of 78.6% of the respondents in this study never received any education during pregnancy which is another barrier to health literacy level as health information is the key resource for managing a health system and improving health care as indicated by WHO (2010). Feedback on pregnancy progress was also not given to the majority of the respondents though it may be hindered by communication skills between professionals and lay persons.

Ebijuwa, Ogunmodede & Oyetola (2013) validated the use of multiple sources of formal and informal health information, even though health care professionals were the preferred source of information, depending on the type of information needed, families and friends were the informal sources they turn to for information. These findings agree with the results of this study which shows that 26.7% of respondents relied on older family members for health care advice,17% relied on partners, which is in accord with the findings by Nesane *et al*. (2016) of little, if any, involvement of male partners in health care during pregnancy. Respondents also indicated to have someone at home assisting them in reading health information which is also a challenge as the family member may also not understand health information. However, multiple sources of information may lead to conflicting information, and

misinterpretation is also possible. The majority of respondents were found to have sought medical advice from others besides health care professionals and 88.1% have used self-medication which may be due to the findings by Stats SA (2012) that individuals with limited health literacy often feel a sense of shame about their skill level and are uncomfortable with being unable to read well, hence, they develop strategies to compensate. With majority of respondents seeking health advice from others besides health care professionals the awareness of PROM as a danger sign may not be clearly understood and may be misinterpreted.

4.17.4 Antenatal Care Attendance and Frequency

Enakpene *et al*. (2010) indicated that women with adequate prenatal care are more likely to be informed about danger signs during pregnancy and are more likely to present early for health care while unbooked cases will try other options, including uncertified traditional birth attendants. The study in Nigeria by Aliyu & Dahiru (2017) showed that overall, 62% of women initiated antenatal care in the first trimester, 27% in second and third trimester,12% where unbooked respectively, which is in accord with the findings of this study that 58.5% of respondents had their first antenatal care (ANC) during the first trimester and only 9.5% were not booked. However, the findings of this study also revealed the tendency of late booking by 48% of respondents who booked in the second trimester which does not comply with WHO recommendations (2010) of first bookings before 20 weeks of gestation.

A study in Bangladesh by Islam & Masud (2018) have shown only 31% of respondents who received the WHO-recommended ANC of a minimum of 4 visits during antenatal which is different from the findings of this study of 68.6% on those who attended

antenatal care 4 times and more. Adequate antenatal care attendance is important in improving the perinatal outcomes as during ANC, the health care workers PROM and they are provided with adequate knowledge on signs of PROM and when to report if it occurs. When pregnant women are equipped with adequate knowledge at ANC, it will improve the perinatal outcomes of PROM since they will be able to report earlier when it happens.

4.17.5 History on Pre-Ruptured Membranes

Birkenmaier, Ries, Lapaire & Hosli (2012) indicated that fluid leakage is common among pregnant women, reported in 3% of all pregnancy and in 5-10% of all deliveries resulting in maternal and neonatal risks supporting the findings of this study though done at a small scale indicating high incidence of pre-ruptured membranes as 63.3% had a history of pre-ruptured membranes, 7.1% had history of stillbirth following pre-ruptured membranes which contributed to the world wide incidence of pre-ruptured membranes complicating about 5% of all pregnancy. Identification of the risk factors of PROM is vital, however, as there has been a trend of inadequate ANC attendance and defaulters, including 7.5% of respondents who were unbooked, it will be a challenge to reach them and empower them with literacy on PROM and perinatal outcomes.

4.17.6 Health Literacy Regarding Fluid Leakage

The study findings have shown that the majority of repondents were aware of the baby growing in the womb and that there is a pool of water, however, 32.9% of respondents did not know, 76.7% have never heard of fluid leakage and 42.4% were not aware that fluid leakage can happen, even months before the baby is born. These findings

corroborate earlier assertions by Nutbeam (2008) that limited knowledge about the body and disease causes may impair understanding of health outcomes. The findings also show a large number of those who were willing to ask questions regarding diet, care and wellness of the baby, might be due to the fact that the main focus on health is on the new baby.

Only 6.2% of the repondents were interested in asking about danger signs during pregnancy as well as fluid leakage which is different from a study done in India by Kamali, Ahmadian, Khajouei & Bahaadinbeigy (2018) which showed most pregnant women to be interested in information about care of the foetus, physical and psychological care, and complications after delivery. The findings of this study have also indicated that most women were aware and understood the signs of fluid leakage even though they were reluctant to seek health care. However, health care institutions were regarded as the best treatment for fluid leakage although waiting to ask someone, drinking a lot of water either natural or from the pastor to replace the lost fluid were regarded as the first action they would take in case fluid leakage occurred.

The findings of this study further indicate a sound knowledge and understanding that a health care facility is the best treatment for fluid leakage. Awareness of pregnant women on danger signs, including PROM, is not enough for improved perinatal outcomes if further steps of seeking health care are not considered. The health care facility will only provide the best treatment for PROM with good perinatal outcomes when reached by the pregnant women. A study in Egypt by Abd-Alaziz (2015) indicated that PPROM complicates 5% of all pregnancies and accounted for one third of preterm deliveries. This study's findings have shown that women only knew of

prematurity or a baby born before time as the perinatal outcome, sickness to both the mother and the baby were only regarded by a few and death was not mentioned as the outcome. However, 12% of perinatal mortality has been associated with PPROM with asphyxia, prematurity and infections remaining the top three in the causes of neonatal deaths. Inadequate literacy on the perinatal outcomes following PROM may have a contribution on the decision to seek health care. Awareness of perinatal outcomes by pregnant regarding PROM can be reached by empowering them with adequate health information to improve the perinatal outcomes.

4.17.7 Cultural Practices Related to Pregnancy and Fluid Leakage

Akeju *et al*. (2016) indicated that women utilize multiple caregivers during pregnancy with a preference for traditional providers. The findings of this study indicated that the majority of respondents believed in a cultural way of raising pregnancy and they even avoided certain foods not because they made them sick, but because of cultural beliefs and practices. These observations are supported by the study done in Zambia by M'Soka, Mabuza & Pretorius (2015) whom in their study found a high rate of cultural beliefs in ways of raising pregnancy, avoiding certain foods during pregnancy and behaviour based on culture during pregnancy.

The findings by Harris, Fleming & Harris (2012) was that health literacy is dependent on culture and culture affects how people think and feel about their health, how they communicate and understand health information. Culture was found to affect when they should seek for health care, how people feel and think about their health, when and from whom to seek care, how they respond towards recommendations regarding health care as well as how they should respond to the recommendations on lifestyle

changes. This is evidenced by delays in seeking health care, hence, the health care facilities still face problems with late antenatal bookings and prolonged rupture of membranes. A large number of pregnant women were also found to be attending cultural practices in the neighbourhood. A study done in Asia by Withers *et al*. (2018) has also shown that cultural beliefs influence the woman's use of formal health care services and high prevalence of traditional practices and beliefs during pregnancy, delivery and postpartum care. The cultural practices and beliefs have an effect on womens' understanding the health information regarding PROM, how they feel and when they should seek health care following PROM. Delay in seeking health care with cultural practice as the first preference will have a negative effect on perinatal outcomes.

4.17.8 Perception Regarding Fluid Leakage

The findings of this study have indicated 42.5% of the repondents believed that PROM can only occur to those who omitted tradition and as a large number relies on adult family members, the advice may be that which is believed to be culturally acceptable as supported by Nutbeam's (2008) findings that a community with lower health literacy level places greater reliance on experience and information through lay persons. The study findings indicated the belief that fluid leakage is due to curse or omitting tradition as perceived by large number of respondents with a lesser number due to perception of infection and natural causes. The findings have also shown that PROM is not regarded as an urgent matter if there is no pain or bleeding which is contributing to delays in seeking health care, resorting to traditional route as the first choice, both of which may endanger the life of the mother and the unborn baby as sicknesses,

including endometritis, chorioamnionitis, and complications such as cord prolapse and respiratory distress can occur as a result.

4.17.9 Decision Regarding Health Care

The findings of this study have indicated that a large number of respondents (59%) relied on family members regarding decision on health care and only 12% relied on their partners which supports the findings by Cherry (2015) and implies that most individuals see themselves as having less control of health and health care decisions. Alden *et al*. (2018) also indicated the involvement of family members in medical health decisions in the Eastern and Western countries.

A study done in Nepal by Lewis, Lee & Simkhada (2015) indicated that older family members occupied top positions in health care decisions and family networks, exercised authority and power over decisions regarding pregnancy management and childbirth comes from preview of elder women, hence, it restricted women's ability to take part in health care decisions. However, findings by Nesane *et al*. (2016) and Ghose *et al*. (2017) have indicated less involvement of male partners in the health care during pregnancy which also support the findings of this study and greatly impacting negatively on health care services.

When the decision regarding health care is from an older family member, even though the women have literacy that when PROM occurs they need to seek health care, the pregnant women may have less power and exercise authority on decisions to reach for health care without the adult's consent. The adult family member in control of decision on health care may be unaware of the effects of PROM on both the mother and the baby if health care is not urged immediately, they might not be aware of cord prolapse possibility following PROM even though there in no pain.

4.17.10 Health-seeking Pattern Following Pre-Ruptured Membranes

A study done in Nepal by Pokhrel, Sharma, Bhatta, Bhandari & Jha (2012) found that poverty, illiteracy, lack of access to health care, occupation and type of family impacted on the health-seeking behaviour with lack of awareness leading to poor health outcomes. These observations lend support to the findings of this study in that illiteracy, type of family and lack of awareness affected health-seeking behaviour resulting in delays in seeking health care, hence, the poor perinatal outcomes, however, a study in Nigeria by Akeju *et al*. (2016) have shown economic factors and trust in traditional medicines contributing to delays in seeking health care during pregnancy.

Verma *et al*. (2016) reported failure to recognize the significance of the problem by pregnant woman and her family as one of the delays of life-threatening complications to receiving treatment. A study by Killewo, Anwar, Bashir, Yunus & Chakraborty (2006) had also shown that a large number of respondents who perceived delay in seeking health care due to inability to judge the graveness of the condition during pregnancy. Moreover, majority of the respondents have actually visited other providers for treatment besides health care which reinforce the findings of this study that indicated a large number of repondents would first wait and only report to the clinic if it persisted and 13% would wait for the pain which indicates that health literacy regarding fluid leakage is minimal because the longer the time of draining, the greater the risk to the mother and baby. This is due to the fact that women don't regard fluid leakage dangerous, only bleeding and pains were regarded as the most dangerous.

4.17.11 Perinatal Outcomes Following PROM

Several literature sources have indicated an association between health literacy and health behaviour which also relates to negative pregnancy outcomes (Charoghchian Khorasani *et al.*, 2018; Sentell *et al.*, 2018; Xie *et al.*, 2019). PPROM has the world wide incidence affecting about 4% of all pregnancies (Abd-Alaziz, 2015; Nana *et al.*, 2010). The study findings were that 28.1% of respondents with PPROM had pre-term deliveries supported by findings by Abd-Alaziz (2015) and Vhembe DHIS (2015) that prematurity is the principal risk of pre-ruptured membranes. Of the repondents, 59.5% delivered at term, but with unhealthy babies, thus implying perinatal outcomes associated with pre-ruptured membranes, asphyxia, prematurity and infections, which remain the top three causes of perinatal morbidity and mortality.

The study findings also indicated that 63.4 % of babies were born sick and admitted and 23% of babies died while 11.9% of respondents were sick and admitted following pre-ruptured membranes which is in accord with the Saving Babies Report (Pattinson & Rhoda, 2016) that pre-rupture of membranes contributes to perinatal mortality and morbidity.

Poverty with high rate of unemployment and low literacy level with inadequate awareness on PROM effects has led to inability to regard PROM as an urgent matter leading to delay in seeking health, hence, the poor perinatal outcomes. The poor perinatal outcomes were seen when the findings indicated that a large number of babies who were sick and admitted following PROM, neonatal mortality was also regarded as the negative outcome.

4.18 Summary

In this chapter, data were analysed and tabulated in frequencies and percentages, and graphs. The tables reflected the items on the research instrument's checklist, and same level items were combined. Although the response rate was 100%, it was difficult to conclude health literacy in general as the percentage varies and none of the items were scored at 100%. Health literacy regarding associated factors of pre-ruptured membranes was very limited as reflected in different tables. The next chapter will entail the summary, limitations, conclusions and recommendations.

CHAPTER 5

SUMMARY, LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The previous chapter entailed the results, study findings and discussion. In this chapter a summary of the research, limitations of the study, conclusion and recommendations will be provided based on the findings of this study. The purpose of this study was to assess the health literacy of lactating mothers regarding associated factors of pre-ruptured membranes on perinatal outcomes in Thulamela clinics, Limpopo Province, South Africa. The study objectives were as follows:

- To assess the health literacy of lactating mothers regarding associated factors of pre-ruptured membranes on perinatal outcomes. The objective was achieved by using self-developed questionnaires to measure variables of interest on health literacy regarding pre-ruptured membranes and associated factors on perinatal outcomes. Chew's health screening tool was also used to assess health literacy of lactating mothers. Low literacy levels were found to impair the health literacy of lactating mothers on associated factors of PROM with failure to identify PROM as a danger sign in need of urgent medical attention which is evidenced by delay in seeking health resulting in poor perinatal outcomes.

- To identify the factors influencing health-seeking patterns of women during pre-ruptured membranes. To achieve this objective the questions in the questionnaire were rephrased and repeated to identify the factors influencing the health-seeking pattern during pre-ruptured membranes. Inadequate knowledge, cultural practices and beliefs during pregnancy. Reliance on older family members regarding decision in seeking health care was found to have impact on health-seeking pattern which further affected the perinatal outcome following PROM.

5.2 Summary

Table 5.1 provides a brief narrative of each chapter of the study.

Table 5.1: Chapter narratives

Chapter	Narrative
1	Chapter 1 is overview of the study which formed a structural point of reference for the study as a whole. The purpose was to assess the health literacy of lactating mothers regarding associated factors of PROM on perinatal outcomes in 12 selected clinics of Thulamela district, Limpopo Province, South Africa. The findings provided recommendations to enhance and provide health education on PROM to all pregnant women as the initial step to improve perinatal outcomes.
2	Chapter 2 entailed the literature review; the following headings were discussed: health literacy concept, health literacy within a community, cultural and religious influences during pregnancy, role of midwives on health promotion, incidence of PROM, clinical presentation and complications of PROM.
3	This chapter encompassed the methodology. The research method and design was detailed. A quantitative research method with a cross-sectional descriptive design was used. Total population sampling was used and 210 lactating mothers were purposively selected. Data were collected using self-developed questionnaires consisting of 4 sections, Data were analyzed using SPSS version 25. Ethical measures, reliability and validity, trustworthiness was maintained throughout the study.

4	In this chapter, the research results and findings were discussed. Results were presented in the form of tables and figures, and were discussed supported by a literature control. Results indicated that low literacy level has led to inadequate health literacy on associated factors of PROM, cultural and religious practices, reliance on older persons regarding decision making regarding health care has contributed to delay in seeking health care during PROM resulting in poor perinatal outcomes.
5	Chapter 5 wrapped up the study. It entails the summary of the study, limitations were discussed, conclusion and recommendations were made based on the study findings. Recommendations were made to the obstetric clients, midwives, system in organization and to the policy makers.

5.3 Limitations of the Study

The study limitations were as follows:

- The study was done on a small scale which does not include the whole of Thulamela district with implication that data cannot be generalized for the whole of Thulamela district.

- Lactating mothers 16 years or less were excluded for ethical reasons. Lactating mothers who were beyond 6 weeks following delivery were also excluded with their perspective and understanding on PROM not considered which might have given a different perspective on the findings.

- Difficulty in obtaining recent literature on complications of PROM presented some challenges. Reliance on older information meant missing the most recent literature regarding PROM complications.

5.4 Plan for Dissemination of Information

The findings of the study will be communicated to a variety of audiences, including

respondents, education of obstetric clients in maternity wards, conference presentations and publications in accredited journal to fellow researchers, research committees, University of Venda Higher Degrees Committee, the participating institutions will receive a copy on feedback which will be submitted to Department of Health in Limpopo Province and recommendations were made based on the findings of the study.

5.5 Conclusion

In assessing health literacy of lactating mothers on associated factors of pre-ruptured membranes on perinatal outcomes, health literacy is still a challenge, low literacy level is impacting on low health literacy. There is still much to be done to improve maternal health literacy. Low health literacy level of the mother and her family, reliance on lay persons regarding health care advice has led to delay in seeking health care. There is failure to recognize the significance of pre-ruptured membranes when it occurs as evidenced by delays in seeking health care.

Low literacy, limited access to health information and materials, low health literacy level, were found to have effects on maternal literacy levels. Poor antenatal attendance, nuclear family decisions on health care, cultural beliefs and practices influenced health-seeking patterns which further exacerbated the receiving and understanding of health information and utilization of health care services. Inadequate health information on associated factors of pre-ruptured membranes and poor utilization of health care services during PROM have a negative impact on the perinatal outcomes following pre-ruptured membranes. Health care providers should consider inclusion of traditional healers and pastors in the in-services of provision of

maternal health literacy and maternal health education outreach need also to focus on the families and community as a whole because health information is the key resource for improved perinatal outcomes. Antenatal care education should also be introduced in the secondary level curriculum to instil knowledge on the importance of amniotic fluid to increase awareness on danger signs during pregnancy. To reach the 2030 Millennium Development Goals, maternal health literacy urges a greater focus to combat and reduce the poor perinatal outcomes on avoidable factors.

5.6 Recommendations

The study is recommended to be done by future researchers on health literacy either including all obstetric clients repeated on a larger scale to cover the gaps in current information and literature.

5.6.1 Recommendations for Obstetric Clients

Obstetric clients need to take responsibility and regard antenatal booking as the first step for healthy mothers and babies. They must be actively involved and participate in provision of care, including suggesting health topics on which they need more understanding and clarity. Such will expose them to the related health information and empower them in decision-making.

5.6.2 Recommendations for Midwives

Midwives should consider health education as a norm at each visit during pregnancy and during the postnatal period; they need to update themselves and ensure provision of health information on danger signs during pregnancy to all pregnant women. They also need to apply a women-centred approach which focuses on a unique being with

unique health needs. Fluid leakage needs to be taught frequently as one of the pregnancy danger signs. Midwives should devise and implement a broader teaching programme that will be extended to the families and the community at large.

5.6.3 Recommendations for the System in the Organization

The system must employ enough midwives as per staff establishment to ensure adequate staff that will be able to provide maternal health education on a daily basis. The system needs to ensure that in-service training on obstetric conditions, including PROM, is done on a frequent basis; they also need to consider the extension of maternal health information to the families and the community at large.

5.6.4 Recommendations for Policymakers

Policy guidelines should be developed in a way that will support and develop frequent maternal health literacy. They also need to develop a strategy to encourage all pregnant women for early booking. Media campaigns on maternal health literacy must also be considered.

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APPENDIX A

UNIVERSITY OF VENDA RESEARCH ETHICS COMMITTEE (UVREC) CLEARANCE CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Ms MV Balibali

Student No:
11514096

PROJECT TITLE: **Health literacy of lactating mothers regarding associated factors of pre ruptured membranes on perinatal outcomes at Thulamela B Clinics, Limpopo Province.**

PROJECT NO: **SHS/18/PDC/20/0911**

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Prof MS Maputle	University of Venda	Supervisor
Ms T Malwela	University of Venda	Co - Supervisor
Ms MV Balibali	University of Venda	Investigator – Student

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: November 2018
Decision by Ethical Clearance Committee Granted
Signature of Chairperson of the Committee: .....
Name of the Chairperson of the Committee: Senior Prof. G.E. Ekosse

University of Venda
PRIVATE BAG X5050, THOHOYANDOU, 0950, LIMPOPO PROVINCE, SOUTH AFRICA
TELEPHONE (015) 962 8504/8313 FAX (015) 962 9080
"A quality driven financially sustainable, rural-based Comprehensive University"

UNIVERSITY OF VENDA
DIRECTOR
RESEARCH AND INNOVATION
2018 -11- 13
Private Bag X5050
Thohoyandou 0950

APPENDIX B

REQUEST TO LIMPOPO PROVINCE DEPARTMENT OF HEALTH TO CONDUCT THE STUDY

Department of Advanced Nursing Sciences
University of Venda
Private Bag X5050
Thohoyandou
0950

02 March 2018

Department of Health, Limpopo Province

Dear Sir/ Madam

Request for permission to conduct a research study

I am a Master`s student at the University of Venda under the School of Health Sciences. I am requesting for a permission to conduct a study in health facilities under the Department of Health. The title of the study is “Health literacy of lactating mothers on associated factors of pre-ruptured membranes on perinatal outcomes”.

The objectives of the study are:

- To assess the health literacy of lactating mothers with regard to implications of pre-membranes rupture and its associated factors on perinatal outcomes.
- To identify the factors influencing the health-seeking pattern of women during pre-rupture of membranes.

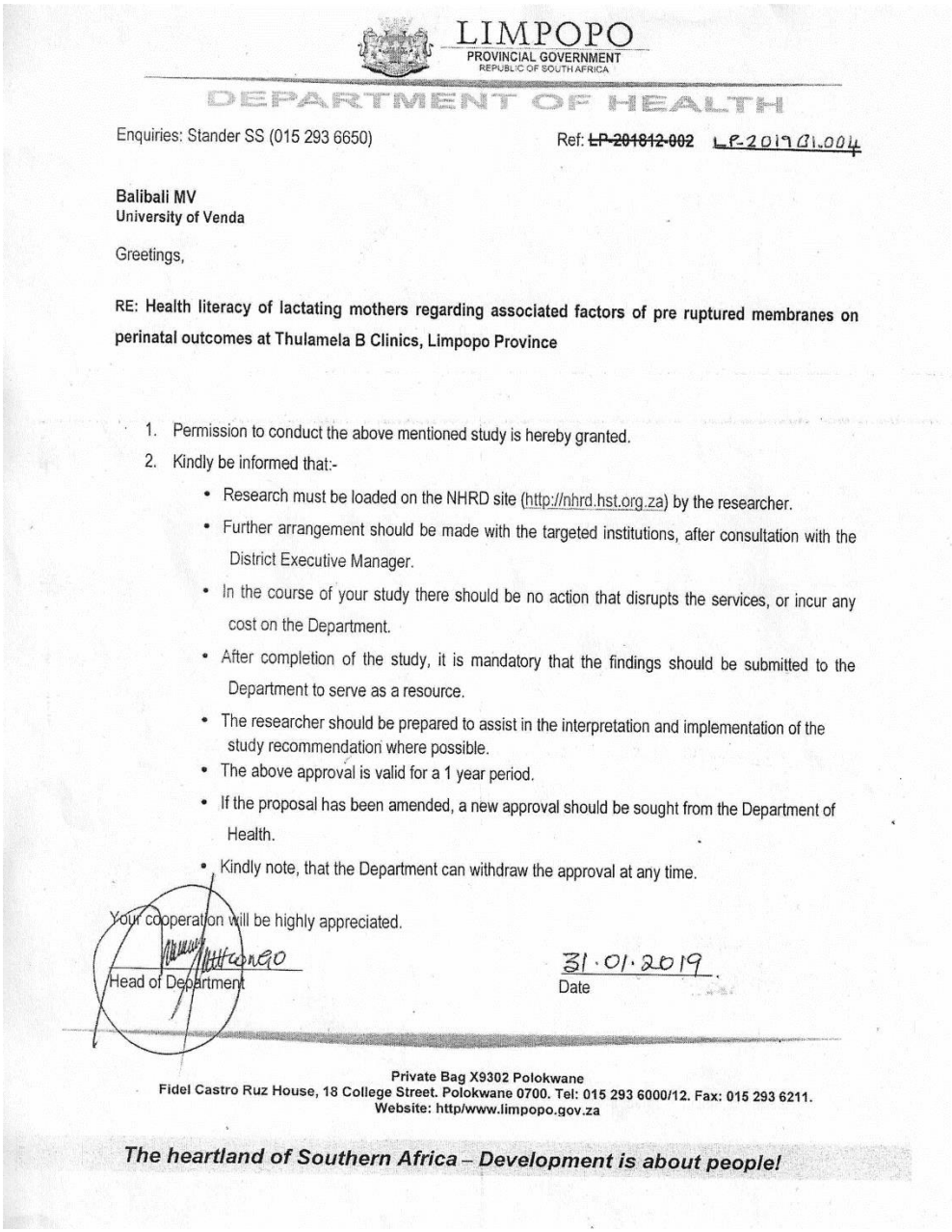
I hope my request will be successful.

Yours sincerely

Mashudu Venicia Balibali
Cell: 072 337 7427
E-Mail address: mashvenicia@gmail.com

APPENDIX C

PERMISSION FROM THE LIMPOPO PROVINCE DEPARTMENT OF HEALTH TO CONDUCT THE STUDY



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Stander SS (015 293 6650)

Ref: ~~LP-201812-002~~ LP-2019 01.004

Balibali MV
University of Venda

Greetings,

RE: Health literacy of lactating mothers regarding associated factors of pre ruptured membranes on perinatal outcomes at Thulamela B Clinics, Limpopo Province

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

Your cooperation will be highly appreciated.

Head of Department

31.01.2019
Date

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

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APPENDIX D

REQUEST TO THE CHIEF DIRECTOR OF HEALTH, VHEMBE DISTRICT TO CONDUCT THE STUDY

Department of Advanced Nursing Sciences
University of Venda
Private Bag X5050
Thohoyandou, 0950
08 February 2018

Chief Director of Health
Department of Health, Vhembe District

Dear Sir/ Madam

Request for permission to conduct a research study

I am a Master`s student at the University of Venda under the School of Health Sciences. I am requesting for a permission to conduct a study in health facilities under the Department of Health. The title of the study is "Health literacy of lactating mothers on associated factors of pre-ruptured membranes on perinatal outcomes".

The objectives of the study are:

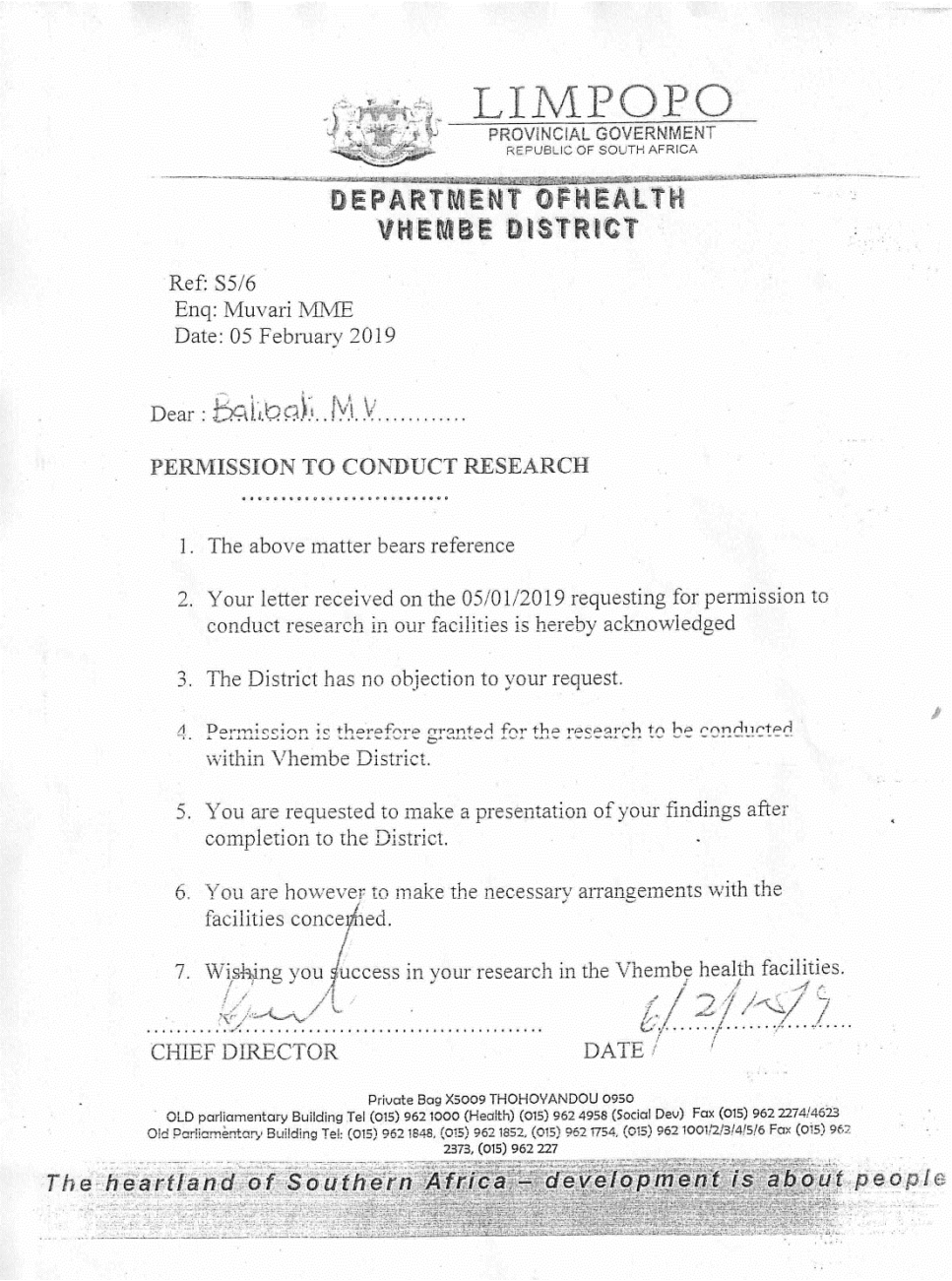
- To assess the health literacy of lactating mothers with regard to implications of pre-membranes rupture and its associated factors on perinatal outcomes.
- To identify the factors influencing the health-seeking pattern of women during pre-rupture of membranes.

I hope my request will be successful.

Yours sincerely
Mashudu Venicia Balibali
Cell: 072 337 7427
E-Mail address: mashvenicia@gmail.com

APPENDIX E

PERMISSION FROM THE CHIEF DIRECTOR OF HEALTH, VHEMBE DISTRICT, TO CONDUCT THE STUDY



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OFHEALTH
VHEMBE DISTRICT

Ref: S5/6
Enq: Muvari MME
Date: 05 February 2019

Dear : Baloyi M V

PERMISSION TO CONDUCT RESEARCH

1. The above matter bears reference
2. Your letter received on the 05/01/2019 requesting for permission to conduct research in our facilities is hereby acknowledged
3. The District has no objection to your request.
4. Permission is therefore granted for the research to be conducted within Vhembe District.
5. You are requested to make a presentation of your findings after completion to the District.
6. You are however to make the necessary arrangements with the facilities concerned.
7. Wishing you success in your research in the Vhembe health facilities.

CHIEF DIRECTOR DATE 6/2/2019

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

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APPENDIX F

LETTER OF INFORMATION

Title of the Research Study:	Health literacy of lactating mothers on associated factors of pre-ruptured membranes on perinatal outcomes
Principal Investigator(s)/Researcher:	Balibali Mashudu — MCur student
Co-Investigator(s)/ Supervisor(s):	Prof MS Maputles — Supervisor Dr T Malwela — Co-Supervisor
Brief Introduction and Purpose of the Study:	To assess the health literacy of lactating mothers on associated factors of pre-ruptured membranes on perinatal outcomes
Outline of the Procedures:	Participation will be strictly voluntary with the right to withdraw from the study at any given time. Respondents will be asked not to write their names on the questionnaires to conform to the ethical principle of anonymity. Respondents will be asked to indicate their agreement or disagreement on health literacy regarding associated factors of pre-rupture of membranes by completing the self- administered questionnaire in the 12 selected clinics 210 Lactating mothers within 6 weeks following delivery irrespective of the mode of delivery will be required. There will be no follow up nor treatment given to the respondents. The procedure only involves completion of questionnaires at the clinic visited, it will take 30-40 minutes to complete the questionnaire. Respondents are free to ask any question from me using contact numbers or e-mail address provided regarding the study or being a respondent.
Risks or Discomforts to the Participant:	There are no foreseeable risks to respondents, but potential risks include loss of time and emotional distress.

Benefits:	The potential benefits to participants include improved assessment of needs with improved health care delivery.
Reason/s why the Participant May Be Withdrawn from the Study:	Participants may withdraw from participating in the study at any given time without stating reasons
Remuneration:	Participants will not be paid or have any monetary remuneration.
Costs of the Study:	Participants will not be expected to cover any costs for the study.
Confidentiality:	Participants names will not be used, codes will be used to identify clinics.
Research-Related Injury:	Debriefing and referral for counselling will be available for emotional stress and there will be no compensation.
Persons to Contact in the Event of Any Problems or Queries:	Please contact the researcher on (072 337 7427), my supervisor Prof Maputle S (084 602 2063) or the University Research Ethics Committee Secretariat (015 962 9058). Complaints can be reported to the Director: Research and Innovation, Prof GE Ekosse (015 962 8313) or Georges Ivo.Ekosse@univen.ac.za.

APPENDIX G

CONSENT FORM

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Balibali Mashudu, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: **SHS/18/PDC/20/0911**,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant …… Date …….. Time …… Signature ……

I, Balibali Mashudu herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher: Balibali Mashudu Date …….. Signature ……

Full Name of Witness (If applicable) …….. Date …… Signature ……

Full Name of Legal Guardian (If applicable) ……... Date …… Signature ……

KHETHEKANYO A. LUNWALO LWA NDIVHISO

Thoho ya tsedzuluso: Ndivho ya vho mme vha no khou mamisa nga ha u kwashea tshitanga/ ubva madi phanda ha u vhofholowa na masiandoitwa kha mme na nwana.

Musedzulusi : Balibali Mashudu mutshudeni wa MCUR

Vhalavhelesi : Prof S Maputle-Mulavhelesi

: Ms. Malwela T-Mulavhelesi

Tsipikwa tsha tsedzuluso: U sedzulusa nga ha ndivho ya vho mme vha no khou mamisa nga ha u kwashea ha tshitanga/u bva madi phanda ha u vhofholowa na masiandoitwa a hone kha mme na nwana.

Tsedzuluso dzi do vha nga hei ndila: U vha tshipida tsha tsedzuluso ndi utou funa ha muthu ene mune, vhadzheneleli vha na ndugelo dzau litsha kana u dibvisa kha tsedzuluso tshifhinga tshinwe na tshinwe. Vhadzheneleli vha tsedzuluso a vha nga vhudziswi madzina kha dzimbudziso u itela uri vha songo divhea.Vha do vhudziswa u sumbedza u tenda kana u hanedza malugana na ndivho yavho nga ha u kwashea ha tshitanga na masiandoitwa a hone. Hu do vhudziswa vhadzheneleli dzimbudziso dzire kha bammbiri, vhadzheneleli ndi vha u bva kha kiliniki dza 12 dzo nangiwaho vhane tshivhalo tshavho ndi 210. Hudo vhudziswa vho mme vha no khou mamisa vhare na vhana vha maduvha u swika kha vhege dza rathi zwisina ndavha uri vho vhofholowa nga ndila dee. Ahunga do vha na u tevhelelwa kana u neiwa mushonga kha vhadzheneleli. U vha tshipida vha tou fila fhedzi bammbiri la dzimbudziso zwine zwa do vha dzhiela mithethe ya 30 uya kha ya 45. Vhadzheneleli vho tendelwa u vhudzisa mbudziso maelana na tsedzuluso nga u kwama musedzulusi kha lutingo kana diresi ya e-mail yo neiwaho.

Khombo kha vhadzheneleli: A huna khombo dzo lavhelelwaho kha vhadzheneleli, fhedzi ha hu nga vha na u xelelwa nga tshifhinga kana u kwamea muyani.

Mbuelo: Mbuelo kha vhadzheneleli dzi katela u khwinisea khau sedza thodea dzavho dza mutakalo zwire na u khwinisea kha ndisedzo ya tshumelo ya mutakalo.

Ndi lini hune vha nga di bvisa khau dzhenelela tsedzuluso: Vho tendelwa u litsha u vha tshipida tsha tsedzuluso tshifhinga tshinwe na tshinwe vha songo talutshedza tshiitisi.

Muholo: Vhadzheneleli a vha nga badelwi kana u holelwa.

Mbadelo dza tsedzuluso: Vhadzheneleli a vha ngo lavhelelwa u bvisa mbadelo na luithihi.

Tshidzumbe: Madzina avhadzheneleli ha nga shumisiwi, hu do shumisiwa fhedzi dzikhoudu dza u talusa kiliniki.

U vhaisala maelana na tsedzuluso: Hu do vha na u rumeliwa kha vhakhuthadzi kha vhane vha do vha vho vhaisala muyani.

Muthu ane vha nga mukwama maelana na dzimbudziso kana zwinwevho ngaha hedzi tsedzuluso:

Vha humbelwa uri vha Kwame musedzulusi kha (0723377427.), musedzulusi vho Prof Maputle S (0846022063) kana munwaleli wa University Research Ethics Committee kha 015 962 9058. Mbilaelo dzi nga livhiswa kha mulanguli: Research and Innovation, Prof GE Ekosse kha 015 962 8313 kana Georges Ivo.Ekosse@univen.ac.za.

KHETHEKANYO B: THENDELANO

Thendelano yau dzhenelela kha tsedzuluso/ u vha tshipida:

- Ndi khou tenda uri ndo talutshedziwa nga musedzulusi, Balibali Mashudu, nga ha thodisiso, vhuvha, vhudifari, mbuelo na masiandoitwa a u di dzhenisa kha tsedzuluso. - Research Ethics Clearance Number: SHS/18/PDC/20/0911
- Ndo tanganedza, ndo vhala, nda pfesesa lunwalo lwa ndivhiso nga ha tsedzuluso iyi.
- Ndi a zwi divha uri mawanwa a tsedzuluso zwo katela minwaha, mbeu, mabebo zwi do vha zwa tshidzumbe nahone zwi do nwaliwa sa repoto.
- Ndo sedza thodea dza tsedzuluso, ndi khou tenda uri mawanwa a thodisiso a do dzheniswa kha khomphutha nga musedzulusi.
- Ndi nga kona u litsha u vha tshipida tsha tsedzuluso tshifhinga tshinwe na tshinwe ndi songo nea tshiitisi
- Ndo vha na tshikhala tsha u vhudzisa mbudziso, nga nne mune ndi sa kombetshedzwi ndi khou khwathisedza uri ndo diimisela u dzhenelela khe hedzi dzitsedzuluso.
- Ndi khou pfesesa uri mawanwa maswa a hedzi tsedzuluso maelana nau dzhenelela hanga ndi do kona u zwi swikelela.

Madzina a mudzheneleli	Datumu	Tshifhinga	Tsaino
Nne, ……	……	……	……

Nne Balibali Mashudu ndi khou khwathisedza uri o bulwaho afho ntha o divhadzwa nga ha vhuvha, vhudifari, na masiando itwa a u vha tshipida tsha tsedzuluso.

Madzina a musedzulusi: Balibali Mashudu

Datume……. Tsaino……

Madzina a thanzi (arali I hone)

Datumu ……. Tsaino……..

Madzina a muundi (arali e hone)

Datumu……. Tsaino……

APPENDIX H

RESEARCH INSTRUMENT

Greetings! My name is Mashudu Balibali, a student in Masters Nursing Sciences at the University of Venda. I am here to get information on your knowledge concerning associated factors of water breakage on the mother and baby outcome. This information will help the health professionals to know how they can further assist the newly delivered mothers in the community. Answer all questions by ticking appropriate answer, however, there is no right or wrong answer. The questions will take about 45 minutes to answer.

SECTION A: SOCIO-DEMOGRAPHIC DATA

Name of the clinic _____

1. **Age at last birthday** ☐

2. **Marital status**

   Single ☐ Married ☐ Divorced ☐ Widow ☐

3. **Ethnicity**

   Pedi ☐ Tsonga ☐ Venda ☐ Other ☐

4. **Religious affiliation**

   Christian ☐ Islamic ☐ Traditional ☐ Other ☐

5. **Social status**

   Student ☐ Employed ☐ Unemployed ☐ Housewife ☐

6. **Highest educational level**

   Primary ☐ Secondary ☐ Tertiary ☐ Post-graduate ☐ None ☐

7. **Are you working?**

   Yes ☐ No ☐

8. **Occupation of partner** ☐

9. **Educational level of partner**

None ☐ Primary ☐ Secondary ☐ Tertiary ☐

10. **Place of last delivery**

Hospital ☐ Church ☐ Home

11. **Mode of delivery in last pregnancy**

Vaginal delivery ☐ Caesarean section ☐ Assisted vaginal delivery ☐

12. **Decision-makers on health care service**

Self ☐ Husband ☐ Older family member ☐

13. **Husband's mode of transport**

Own car ☐ Public transport ☐ Bicycle ☐ None ☐

SECTION B: FACTORS ASSOCIATED WITH PRE-RUPTURED MEMBRANES AND FLUID LEAKAGE

1. **How many times have you been pregnant?**

Once ☐ 2 Times ☐ 3 Times ☐ 4 Times ☐ 5 Times and above ☐

2. **How many babies do you have?**

1 ☐ 2 ☐ 3 ☐ 4 or More ☐

3. **How old is the baby now?**

3 Days ☐ 2 Weeks ☐ 6 Weeks ☐

4. **Did you attend antenatal care while expecting this baby?**

Yes ☐ No ☐

5. **How many times did you attended the antenatal clinic?**

1-3 Times ☐ 4-6 Times ☐ Above 6 Times ☐ None ☐

6. At how many months did you start booking?

0-3 Months ☐ 4-6 Months ☐ More than 6 Months ☐

7. Reasons for not booking?

Didn't know I was pregnant. ☐

Was afraid to go to the clinic. ☐

I was shy. ☐

The baby came earlier before booking. ☐

8. History of still birth?

1 ☐ 2 ☐ 3 ☐ 4 and Above ☐

9. Any sickness during pregnancy?

None ☐ High blood pressure ☐ Diabetes ☐ Epilepsy ☐ Others ☐

10. Did you receive any education during pregnancy?

Yes ☐ No ☐

11. The information you received above was about?

Family planning ☐

Breastfeeding ☐

Healthy diet ☐

Danger signs of pregnancy ☐

Fluid leakage ☐

12. Did you have fluid leakage before giving birth to this baby?

Yes ☐ No ☐

13. Why did you come to the clinic today?

For first check up ☐

It's my appointment date for follow-up check-up ☐

For baby to get injections ☐

Other ☐

14. How long do you take travelling to the clinic?

Less than 1 hour		2 Hours		3 Hours and more	

15. From what you know, where does the baby grow during pregnancy?

In the tummy	
In the stomach	
In the tummy with a pool of water	
Don't know	

16. Is there a pool of water where the baby is growing?

Yes		No	

17. By the time you were pregnant, did you ask about any pregnancy related issue after check-up?

Yes		No	

18. At the present moment do you have questions you want to ask the nurses?

Yes		No	

19. If you would like to ask, what will you ask about?

Wellness of the baby	
What you need to eat.	
How to take care of the baby.	
What is dangerous during pregnancy?	
I am shy to ask about anything.	

20.	Do you have problems understanding health information which is written or that is being taught?	Yes	No
21.	Do you find health information important?	Yes	No
22.	Are the health educational materials at your clinic e.g. posters written in a way that you can understand?	Yes	No
23.	Do you find hospital or clinic signs difficult to understand?	Yes	No
24.	Do you keep the follow up dates for check-up?	Yes	No
25.	Have you ever missed a follow up or check-up date due to misunderstanding?	Yes	No

26.	Do you clearly understand the instruction on how to take the medication if given any	Yes	No
27.	Did your health care provider [nurse] explains the findings and progress in a way that you would understand?	Yes	No
28.	Are you able to explain to someone at home on the things that the nurse told you about your pregnancy?	Yes	No
29.	Do you have anyone helping you at home in reading hospitals materials such as clinic card?	Yes	No
30.	Do you often ask the nurse questions about the baby and health in general?	Yes	No
31.	Whom did you usually spend time with when you were pregnant?	Yes	No
32.	Do you have main support?	Yes	No
33.	Do you seek health advice from any person besides health professionals?	Yes	No
34.	If yes, do you prefer to ask the person?	Yes	No
35.	Do you have preference on medical advice?	Yes	No
36.	Have you ever used self-medication while pregnant?	Yes	No

SECTION C: CULTURAL PRACTICES AND BELIEFS

1. Where do you usually go to when you are sick?

Clinic		Chemist		Private Doctor		Healer		Pastor	

2. Who is the first person you consult when sick?

Family		Partner		Friend		Nurse		Other	

3.	Is there a cultural way to raise pregnancy issues?	Yes	No
4.	Do you follow any cultural practices during pregnancy?	Yes	No
5.	Did you use certain medicines during pregnancy which are not from the clinic?	Yes	No
6.	Do you avoid certain food during pregnancy not because they make you feel sick?	Yes	No
7.	Do you attend the cultural practices in your area or in neighbourhood?	Yes	No
8.	Have you ever heard of fluid leakage during pregnancy	Yes	No

9. If you have heard or know about fluid leakage, where did you get the information?

Health care worker/Nurses	
Mom connect messages	
From friend or relative	
From books or internet	
Through experience with past pregnancy	

10. When will you report fluid leakage at the clinic or hospital if it happens to you?

As soon as it happens	
Will wait for few hours and go to clinic if it does not stop	
Will first wait for the pain	
Will wait for a day or more	
Will never report to the clinic	

11. Who will you tell first?

The nurse at clinic	
Partner	
Relative or friend	
Pastor or the family traditional healer	
No one	

12. Do you think it can happen months before time of birth?

Yes ☐ No ☐

13. What do you regard most dangerous during pregnancy?

Bleeding ☐ Pains ☐ Feeling sick ☐ Fluid leakage

14. What do you think can cause of fluid leakage before time?

Curse ☐ Misfortune ☐ Natural process ☐ Infections

15. Who can experience fluid leakage before time?

Anyone ☐ Those who omit tradition ☐ No one ☐

16. What are the signs of fluid leakage?

Draining water	
Draining water with or without pain	
Draining dirty water	
All of the above	
None of the above	

17. Do you think it can be prevented?

Yes ☐ No ☐

18. What did you fear most during pregnancy before time of birth?

Draining water	
Fluid leakage	
Bleeding	
All of the above	
None of the above	

19. Fluid leakage is dangerous to?

The mother	
The unborn baby	
Both the mother and the baby	
All of the above	
None of the above	

20. What will happen if fluid leakage is not treated for a long time?

Mother will become sick	
Baby will become sick	
Both the mother and the baby will be affected	
Nothing serious will happen	

21. What will you do if fluid leakage can happen before time?

Will drink a lot of water to replace the fluid	
Will quickly go to hospital or clinic	

Will sit at home waiting for someone so that you will ask them	
Will quickly go to the traditional healer for medicines to stop the leakage	

22. What do you think is the best treatment for fluid leakage?

Clinic or hospital medicine	
Water from the pastor	
Herbs from traditional healer	
All of the above	
None of the above	

23. What problems do you think fluid leakage can cause to the baby?

Baby born before time	
Sicknesses	
Death	
All of the above	
None of the above	

SECTION D: HEALTH-SEEKING PATTERN AND PERINATAL OUTCOMES

1. How long do you think you can stay pregnant after fluid leakage?

Months until due time	
Few weeks	
Few days	
Few hours	

2. Have you ever heard of or experienced fluid leakage before?

Yes		No		Have heard about it	

3. What do you think was the cause of the problem?

Natural process	
Injury	
Sicknesses	
Bad luck	

Not sure ☐

4. How long did the water come out before you give birth?

A week ☐ Days ☐ Hours ☐ Few minutes ☐

5. Which step did you take after it happened?

Tell someone at home for advice ☐

Rush to the clinic ☐

Consult with the healer ☐

Didn't think it's serious ☐

6. Have you ever heard of or experienced fluid leakage before?

Didn't know what was happening ☐ Scared ☐ Anxious ☐

7. What was done at the clinic or hospital?

Was admitted being sick ☐

Baby was delivered same time ☐

Was done operation quickly ☐

Not sure ☐

8. What happens to the baby after you gave birth?

Baby was alive and healthy ☐

Baby was sick and admitted ☐

Baby didn't survive ☐

Was admitted with the baby ☐

9. How were you feeling afterwards?

Relieved ☐ Anxious ☐ Sad ☐ Emotional ☐

10. How long did you wait before going to clinic or hospital?

Minutes ☐

Hours ☐

Didn't know what was happening ☐

Didn't go to clinic or hospital ☐

11. What were your expectations?

The staff could do ☐

The staff did their best ☐

Something should have been done ☐

Not sure what to expect ☐

12. What was your worst fear at that time?

Losing the baby ☐

Losing your life ☐

Losing both lives ☐

13. Do you think something should have been done in your previous situation?

Yes ☐ No ☐

14. What did you learn about fluid leakage from the previous experience?

To rush to clinic when fluid leakage happens ☐

Any fluid leakage can be dangerous ☐

Never take fluid leakage more seriously ☐

15. How was the baby health after delivery?

Baby born before time ☐

Baby born in time and healthy ☐

Baby born in time, but not healthy ☐

Ndumeliso! Dzina langa ndi Mashudu Balibali, muthudeni wa Masters ya Nursing Sciences gudedzini la University of Venda. Ndo da fhano u todisisa nga ha ndivho ya vho mme nga ha u kwashea ha tsitanga na masiando ita kha mme na nwana. Ndivho hei I do thusa vhashumeli vha mutakalo u divha uri vha nga isa hani phanda na u thusa vho mme vhaswa tshitshavhani. Vha humbelwa u fhindula mbudziso dzothe nga u swaya kha phindulo ine vha khou vhona yo tea, fhedziha a huna phindulo ire yone kana isi yone, u fhindula dzimbudziso zwi do vha dzhiela mithethe ya 30 uya kha 45.

KHETHEKANYO A: MBUDZISO NGA HA VHONE

Dzina la kiliniki _____

1. **Minwaha yavho** ☐
2. **Vhomaliwa?**

   Haai ☐ Ee ☐ Khathalano ☐ ulovheliwa ☐
3. **Lushaka lwavho**

   Pedi ☐ Tsonga ☐ Venda ☐ dzinwe ☐
4. **Vhurereli havho**

   Tshikreste ☐ Islamu ☐ Sialala ☐ dzinwe ☐
5. **Mushumo wavho**

   Mutshudeni ☐ Ndiashuma ☐ Athishumi ☐
6. **Pfunzo dza nthesa**

   Phureimari ☐ Secondary ☐ Gudedzini ☐ Ndonograduata ☐ tAhuna ☐
7. **Vha ya shuma?**

   Ee ☐ Haai ☐
8. **Mushumo wa mufarisi wavho** ☐
9. **Pfunzo dza mufarisi wavho**

   Ahuna ☐ Primari ☐ Secondary ☐ Gudedzi ☐
10. **Vho vhofholowela ngafhi?**

    Sibadela ☐ Kerekeni ☐ Hayani
11. **Vho vhofholowa hani?**

    Lwamvelo ☐ Muaro ☐ U thusedzwa ☐
12. **Ndi nnyi ano dzhia tsheo nga ha mutakalo**

Nne ☐ Mufarisi ☐ Mualuwa mutani ☐

13. Mufarisi wavho una goloi?

Ee ☐ Haai ☐ Basiigira ☐

KHETHEKANYO B: ZWIELANAHO NA U KWASHEA HA TSHITANGA

1. Vho no dihwala lungana?

Luthihi ☐ Luvhili ☐ Luraru ☐ Luna ☐ Lutanu na u fhira ☐

2. Vha na vhana vhangana?

Muthihi ☐ Vhavhili ☐ Vhararu ☐ Vhana na u fhira ☐

3. Nwana una vhege nngana kana maduvha?

Maduvha a 3 ☐ Vhege 2 ☐ Vhege dza 6 ☐

4. Vho vha vho buka tshikalo tsha vhaimana?

Ee ☐ Haai ☐

5. Vho tshimbila tshikalo lungana vho dihwala?

1-3 ☐ 4-6 ☐ Ntha ha 6 ☐ Athongo ya ☐

6. Vho thoma tshikalo nga minwedzi mingana?

0-3 ☐ 4-6 ☐ ntha ha minwedzi ya 6 ☐

7. Zwiitisi zwa u sa buka tshikalo

Thongo divha uri ndi muimana ☐

Ndo shavha uya kiliniki ☐

Nda ndi na thoni ☐

Nwana o tavhanya u da ☐

8. Vho no lovheliwa nga vhana lungana?

1 ☐ 2 ☐ 3 ☐ 4 na u fhira ☐

9. Vhulwadze ha musi vho dihwala?

Ahuna ☐ Mutsiko wa malofha ☐ Swigiri ☐ Hauwa ☐ zwinwe ☐

10. Vho wana pfunzo musi vho di hwala?

Ee ☐ Haai ☐

11. Pfunzo ye vha I wana ndi ya mini?

Vhuteamuta ☐

Umamisa ☐

Kulele kwa mutakalo ☐

Zwire khombo kha muimana ☐

U kwashea ha tshitanga ☐

12. Vho kwasshea tshitanga musi vha saathu vhofholowa?

Ee ☐ Haai ☐

13. Vho dela thuso ifhio namusi?

U tshekiwa lwa u thoma ☐

U tshekiwa habe ☐

U thavhisa nwana ☐

Zwinwe ☐

14. Zwi vha dzhiela tshifhinga tshingafhani u swika kiliniki?

Fhasi ha awara ☐ 2 hAwara mbili ☐ Tharuna u fhira ☐

15. Zwine vha divha, nwana u aluwa ngafhi?

Thumbuni ☐

Muvhilini ☐

Thumbuni hu re na madi ☐

A thi zwi divhi ☐

16. Huna damu la madi hune nwana a aluwa hone?

Ee ☐ Haai ☐

17. Musi vho dihwala vho vha vha tshi vhudzisa mbudiso nga murahu ha u tshekiwa?

Ee ☐ Haai ☐

18. Namusi vha na mbudziso?

Ee ☐ Haai ☐

19. Arali vha fhiwa tshikhala, vha nga vhudzisa nga ha mini?

Mutakalo wa nwana	☐
Zwine vha tea ula	☐
Vhathogomela hani nwana	☐
Ndi zwifhio zwire kombo kha muimana?	☐
Ndi na thoni, ndi shona u vhudzisa	☐

20.	Vha na vhukondi ha u pfesesa zwa mutakalo zwo nwalwahi kana zwi no khou funzwaa?	Ee	Haai
21.	Vha vhona zwi zwa ndeme u funziwa nga mutakalo?	Ee	Haai
22.	Zwau funza nga mutakalo afhp kiliniki yavho zwi nga ndila ine vha kona uzwi pfesesa?	Ee	Haai
23.	Tswayo kiliniki yavho dzi a pfesesea?	Ee	Haai
24.	Vha a tevhedza datumu yavho ya u tshekiwa?	Ee	Haai
25.	Vho no pfuka datumu ya u tshekiwa nga u sa pfesesa?	Ee	Haai
26.	Vha a pfesesa kunwele kwa mushonga musi vhou fhiwa?	Ee	Haai
27.	Musi vha tshi fhedza u toliwa, vho talutshedziwa uri zwi khou tshimbila hani?	Ee	Haai
28.	Vha ya kona u talutshedza munwe muthu hayani musi vho talutshedziwa nga vhaongi?	Ee	Haai
29.	Vha na muthu ano vha thusa u vhala zwithu zwa kiliniki, ro katela khadi ya nwana?	Ee	Haai
30.	Do you often ask the nurse questions about the baby and health in general? Vha dzulela u vhudzisa mbudziso musi vho no tshekiwa?	Ee	Haai
31.	Vhana muthu ane vha takalela u muvhudzisa nga zwa mutakalo asi muongi?	Ee	Haai
32.	Vha na thikhedzo?	Ee	Haai
33.	Vha ya takalela u vhudzisa vhanwe vhathu nga zwa mutakalo?	Ee	Haai
34.	Vha ya vhudzisa kha munwe na munwe?	Ee	Haai

35.	Vhaya thogomela u vhudzisa nga ha mutakalo?	Ee	Haai
36.	Vho no dishumisela mushonga musi vho dihwala we vha sa u wane kiliniki?	Ee	Haai

KHETHEKANYO C: U TEVHELELA SIALALA NA MVELO

1. Vha dzulela u ya ngafhi u thoma musi vha tshi lwala?

Kiliniki ☐ Kemisini ☐ Dokotela ☐ Maine ☐ Vhafunzi ☐

2. Vha vhudza nnyi u thoma musi vha tshi khou lwala?

Muta ☐ Mufarisi ☐ Khonani ☐ Muongi ☐ Vhanwe ☐

3.	Huna maitele a u di thogomela muthu e muimana?	Ee	Haai
4.	Vha ya tevhela maitele a sialala musi vho dihwala?	Ee	Haai
5.	Vho vhuya vha shumisa minwe mishonga musi vho di hwala isi ya kiliniki?	Ee	Haai
6.	Huna zwiliwa zwine vha sa zwile musi vho dihwala, husi nga u sa zwi funa?	Ee	Haai
7.	Vha ya dzhenelela kha zwa sialala henefho shangoni lahavho kana nga tsini?	Ee	Haai
8.	Vho no vhuya vha pfa nga hau kwashea ha tshitanga	Ee	Haai

9. Arali vho no zwi pfa, vho zwi pfa ngafhi?

Vhaongi	
Milaedza nga Mom connect	
Khonani kana shaka	
Dzibugu kana internet	
Zwo no itea khavho	

10. Vha nga ya lini kiliniki kana sibadela musi vho kwashea tshitanga?

Ngau tavhanya musi zwi this itea	
Vha do imanyana tshifhinga vha kona uya kiliniki arali zwasa ima	
Vha do lindela u pfa vhutungu	
Vha do lindela maduvha na u fhira	
A vha nga yi kiliniki ngauri ahuna vhutungu	

11. Hone vha nga vhudza nnyi uthoma?

Muongi kiliniki	
Mufarisi	
Shaka kana khonani	
Mufunzi kana maine wa muta	
Avha nga vhudzi muthu	

12. Vha vhona ungari zwia itea minwedzi muthu atshe kule na u vhofholowa?

Ee ☐ Haai ☐

13. Ndi zwifhio zwine vha vhona zwi khombo musi muthu o dihwala?

U bva malofha ☐ Vhutungu ☐ U lwala ☐ U bva madi

14. Vha vhona ungari u kwashea tshitanga tshifhinga tshau beba tshi songo swika zwi vhangiwa nga mini?

U senwa nga vhafhasi ☐ Badi ☐ Mupo ☐ U bva madi

15. Zwi nga itea kha vhafhio?

Vhothe ☐ Vha sa tevheli mvelo ☐ Ahuna ☐

16. Ndi dzifhio tsumbo dza u kwashea tshitanga?

U bva madi	
U bva madi huna vhutungu naho vhusiho	
U bva madi are na tshika	
Zwothe zwo bulwaho	
A huna na tshithihi kha zwo bulwaho	

17. Zwi a thivhelea?

Ee ☐ Haai ☐

18. Ndi zwifhio zwine vha zwi vhona zwi khombo kha muthu o dihwalaho?

Vhutungu	
U bva madi	

B U bva malofha	
Zwothe hezwo	
A huna na tshithihi	

19. U kwashea ha tshitanga zwi khombo kha nnyi?

Mme	
Nwana asathu bebiwa b	
Mme na nwana	
Azwi khombo	

20. Hunga itea mini musi tshitanga tsho kwashea lwa tshifhinga tshilapfu husina u lafhiwa?

Mme u do lwala	
Nwana u do lwala	
Mme na nwana vha do lwala	
A huna zwi no dina zwine zwa nga itea	

21. Tshitanga tsho kwashea vha tea u ita mini?

U nwesa madi manzhi hu u thivha o shuluwaho	
U gidimela kiliniki kana sibadela	
U dzula hayani vho lindela u thoma vha vhudzisa munwe	
U ya ha vho maine u wana mushonga wa u thivhela madi	

22. Dzilafho la khwine kha u kwashea tshitanga ndi lifhio?

Kiliniki kana sibadela	
Madi o rabelelwaho nga vhafunzi	
Miri ya vho maine	
Zwothe zwo bulwaho	
A huna na tshithihi	

23. U kwashea tshitanga zwi na masiandoitwa de kha nwana?

U bebiwa tshifhinga tshi songo swika	
Malwadze	
U lovha	

Zwothe zwo bulwaho

A huna na tshithihi tshazwo

KHETHEKANYO D: KUTODELE KWA TSHUMELO DZA MUTAKALO NA MASIANDOITWA KHA MME NA NWANA

1. **Muthu anga dzula tshifhinga tshingafhani o dihwala nga murahu hau kwashea tshitanga**

Minwedzi u swikela tshifhinga

Dzivhege

Maduvha

Dziawara

2. **Vho no vhuya vha kwashea tshitanga kana u pfa nga hazwo?**

Ee | Haai | Ndo no zwi pfa

3. **Vha vhona ungari zwi vhangiwa nga mini?**

Mupo

Badi

Malwadze

A thina vhutanzi

4. **Madi o bva tshifhinga tshingafhani vha saathu vhofholowa?**

Vhege | Maduvha | Dziawara | Mithethe isi gathi

5. **Vho dzhia liga lifhio musi zwo itea?**

U toda ngeletshedzo kha munwe

U gidimela kiliniki

U ya u vhonisa ha vho maine

Thongo vhona zwi zwa ndeme

6. **Vho di pfa hani nga murahu ha misi zwo itea?**

Ndo vha ndi sa divhi uri hu khou itea mini | U ofha | U tshuwa

7. **Vho thusiwa hani kiliniki kana sibadela?**

Vho ededziwa vha tshi khou lwala	
Nwana o bvisiwa nga u tavhanya	
Vho itiwa muaro wa shishi	
A thina vhutanzi	

8. Ho itea ni kha nwana vho no vhofholowa?

O tshila ana mutakalo	
O ededziwa a tshi khou lwala	
Nwana ha ngo tsshila	
Vho valelwa na nwana	

9. Vho di pfa hani nga murahu ha zwothe?

U vhofholowa ☐ U tshuwa ☐ U vhaisala muyani ☐

10. Vho lindela tshifhinga tshingafhani u ya kiliniki?

Mithethe	
Awara	
Thingo divha uri hu khou itea ni	
A thongo ya kiliniki kana sibadela	

11. Ndavhelelo dzavho dzo vha dzifhio?

Vhaongi ho fanela vho ita vha fhirasa	
Vhaongi vho ita zwothe zwo fanelaho	
Arali ho vha ho itwa zwinwe nga tshifhinga	
A thingo vha na ndavhelelo	

12. Nyofho yavho khulu yo vha I kha zwifhio?

U lovheliwa nga nwana	
U lozwa vhutshilo havho	
U lozwa vhutshilo havho na ha nwana	

13. Vha vhona unga ho vha hu tshi nga itwa zwinwe kha nyimele yavho?

Ee ☐ Haai ☐

14. Zwo vha gudisa mini ngau kwashea ha tshitanga?

U gidimela kiliniki musi zwo itea	
U kwashea tshitanga zwi khombo	
U kwashea ha tshitanga a zwi khombo	

15. Mutakalo wa nwana wo vha u hani?

Nwana o bebwa tshifhinga tshi songo swika	
Nwana o bebwa nga tshifhinga ana mutakalo	
Nwana o bebwa nga tshifhinga fhedzi asina mutakalo	

APPENDIX I

LANGUAGE EDITING AND TYPESETTING CERTIFICATE

CONFIRMATION BY LANGUAGE EDITOR

Prof Donavon C. Hiss

Cell: 072 200 1086 | **E-mail:** hiss@gmx.us **or** | dhiss@outlook.com

14 September 2019

To Whom it May Concern

This serves to confirm that I have edited the language, spelling, grammar and style of the **Master of Nursing Sciences** thesis by **Mashudu Venicia Balibali**, titled: "**Health Literacy of Mothers Regarding Associated Factors of Pre-Ruptured Membranes on Perinatal Outcomes at Thulamela B Clinics, Limpopo Province.**" The manuscript was also professionally typeset by me.

Sincerely Yours

Cert. Freelance Journalism, Dip. Creative Writing, MSc (Medicine), PhD