

**FACTORS CONTRIBUTING TO HIGH PERINATAL MORTALITY RATES IN
THE SELECTED PUBLIC HOSPITALS OF VHEMBE DISTRICT IN LIMPOPO
PROVINCE, SOUTH AFRICA**

By

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DECLARATION

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I declare that the dissertation on “**FACTORS CONTRIBUTING TO HIGH PERINATAL MORTALITY RATES IN THE SELECTED PUBLIC HOSPITALS OF VHEMBE DISTRICT IN LIMPOPO PROVINCE, SOUTH AFRICA**” is my work and that all the sources that were used or quoted have been indicated and duly acknowledged by means of complete referencing. Furthermore, I proclaim that this work has not been submitted before for any other degree elsewhere.

.....

Signature
(Makhado LC)

.....

Date

DEDICATION

This dissertation is dedicated to all mothers who lost their children due to high perinatal mortality rates.

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ABSTRACT

Background: Perinatal and neonatal mortality rates remain high in South Africa especially in rural areas and townships where the majority of poor people live. With regard to perinatal and neonatal mortality, South Africa like many other developing countries has failed to achieve MDG 4 and 5 by 2015 regardless of many efforts by the governments. To achieve the SDG which replaced MDGs for child health, it is necessary for the South African public and private health care to reduce substantially perinatal and new born deaths, particularly in rural areas. There are many factors that contribute to a high perinatal mortality rate in public hospitals in rural areas. To understand these factors, a study was conducted with midwives from selected public hospitals in Limpopo, Vhembe district which experiences the highest perinatal mortality rates in South Africa.

Purpose and methodology: The purpose of this research study was to assess factors contributing to high perinatal mortality rates in the selected public hospitals in Vhembe district. A quantitative, descriptive, exploratory and cross-sectional design was used to collect data from the sampled hospitals in the Vhembe district. Hospitals were purposively sampled based on the statistics of monthly deliveries. The target population consisted of all registered midwives who had been working in the maternity units for at least two years. Cochran's formula was used to determine the sample from the target population for each hospital. A random sample of 110 respondents was selected upon which a questionnaire was administered to each by the researcher. Responses from the close-ended and open-ended questions was grouped and analysed quantitatively by means of Statistical Package for Social Sciences 23.0 (SPSS).

Results and findings: Results were presented in frequency tables and graphs revealed that most of the midwives lacked knowledge and skills in a number of key areas needed for them to operate efficiently in the maternity wards. There was also high staff turnover which led to a few midwives being overworked. The utilisation of guidelines and protocols in maternity was left to individual midwives as the hospitals did not evaluate the use of it.

Conclusions: Lack of key skills in assisting women in labour, and poor use of guidelines and understaffing were the main contributing factors to high perinatal mortality rates in the selected public hospitals of Vhembe district. Midwife attitudes were not a contributory factor.

Recommendations: In view of lack of knowledge among midwives due to lack of training, it is recommended that all in-service workshops and training be compulsory to all midwives and midwifery nursing lecturers preferably, as the source of knowledge.

Key words: infant mortality rates, neonatal mortality rates, perinatal mortality rates.

LIST OF ACRONYMS/ABBREVIATIONS

ACRONYM	MEANING
AIDS:	Acquired Immune Deficiency Syndrome
ANC:	Antenatal Care
ART:	Antiretroviral treatment
BANC:	Basic Antenatal care
BEmOC:	Basic Emergency Obstetric Care
CEmOC	Comprehensive Emergency Obstetric Care
CHW:	Community Health Worker
CI:	Concentration Index
CISR	Council for scientific and industrial research
DCST:	District Clinical Specialised team
DoH:	Department of Health
EMHP:	Ecology Model of Health Promotion
EmOc:	Emergency Obstetric Care
ENAP:	Every New-born Action Plan
EOST:	Emergency Obstetric Scenario Training
ESMOE	Essential Steps in Managing Obstetric Emergencies
GHO:	Global Health Observatory
HBB:	Helping Babies Breath
HIV:	Human Immunodeficiency Virus
IUFGR:	Intrauterine Foetal Growth Restriction
KZN:	KwaZulu-Natal
LINC:	Limpopo Initiative for New-born Care
MDG:	Millennium Development Goals
NaPeMMCo:	National Perinatal Morbidity and Mortality Committee
NDH-RSA:	National Department of health, Republic of South Africa
NMR:	Neonatal Mortality Rate
PHC:	Primary Health Care
PNMR:	Perinatal Mortality Rate
PPR:	Poorest-Poor Ratio
PROM:	Premature Rupture of Membranes

ACRONYM**MEANING**

RSA:	Republic of South Africa
SB:	Stillborn Babies
SES:	Socio-Economic Status
SPSS	Statistical Package for the Social Science
TBA:	Traditional Birth Attendants
U5MR:	Under 5 Mortality Rates
UHDC:	University Higher Degree Committee
UN:	United Nation
UNICEF:	United Nation Children's Fund
WHO:	World Health Organisation

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

There was a call by United Nations (UN) for Millennium Development Goals (MDGs) to reach a target of reducing child mortality rates by two-thirds by 2015. Unfortunately, MDG-4 target for reducing child mortality rates was unlikely to be reached. The focus should be on the implementation of sustainable measures to improve perinatal mortality rates, and ultimately reducing under-5 mortality by 2030 (Dorrington, Bradshaw, Laubscher & Nannan, 2018: 14).

According to Lawn, Lee, Kinney, Sibley, Carlo, Paul, Pattinson and Darmstadt (2016:1), the number of perinatal mortality has reduced more gradually than maternal mortality. Hence, there is a need to revise health services delivery in health facilities regarding both maternal and perinatal during child birth in order to improve on MDG-4 for child health, MDG-5 to improve maternal health, MDG-6 to combat the Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS), malaria and other diseases. There is a strong relation between maternal health and perinatal health, that is, failure to provide good maternal health during antenatal, intrapartum and postpartum periods leads to perinatal death, and hence MDG-4 cannot be met. Maternal and perinatal mortality reports show that the five objectives in the Every New-born Action Plan (ENAP) is effective but there is insufficient data to overcome bottlenecks in improving health facilities (Kerber, Mathai, Lewis, Flenady, Erwich, Sergun, Aliganyira, Abdelmegeid, Allanson, Roos & Rhoda, 2015:9).

Common causes of perinatal mortality rates are intrapartum birth asphyxia, prematurity and infections, however all these deaths were believed to be possibly preventable (Pattinson & Rhoda, 2014:11). There are programmes addressing improving the maternal care such as basic antenatal care plus (BANC) and they often have good impact on the outcomes of the new-born. Neonatal mortality rates remain high in South Africa and particularly in rural areas, such as Limpopo province. This was confirmed by the researcher who attended perinatal

review meetings with a district clinical specialist team (DCST) where neonatal death was reported due to avoidable factors, missed opportunities and sub-standard care of health professionals. This study focused on assessing the midwives and Accoucheur concerning factors contributing to high perinatal mortality rates in the selected public hospitals of Vhembe district in Limpopo province, South Africa.

1.2 BACKGROUND INFORMATION/SOURCE OF THE RESEARCH PROBLEM

Perinatal mortality rate refers to the frequency of deaths among children a week before their expected birth day. It is viewed as a vital indicator for health of a nation because of its association with a variety of features such as maternal health, quality and access to medical care, socio-economic conditions and public health practices (MacDorman, Mathews, Mohangoo & Zeitlin, 2014:1; Requejo, Bryce, Barros, Berman, Bhutta, Chopra, Daelmans, Francisco, Lawn, Maliqi & Mason, 2015:466). According to Lawn et al, (2015:1) it was estimated that more than 2.6 million stillbirths occurred in 2015 during third trimester period. Furthermore, it is estimated that over 3.3 million infants are born dead every year while 33% of these deaths occur at birth, largely due to avoidable causes. Of all deaths of babies, 98% occur in the developing world, with 1.16 million taking place in Sub-Saharan Africa and stillborn account for more than 50% of all perinatal deaths (Aune, Saugstad, Henriksen & Tonstad, 2014:15; Aminu, Unkels, Mdegela, Utz, Adaji & Den Broek, 2014:141; Liu, Oza, Hogan, Perin, Rudan, Lawn, Cousens, Mathers & Black, 2015:430; Blencowe, Cousens, Jassir, Say, Chou, Mathers, Hogan, Shiekh, Qureshi, You & Lawn, 2016:98; WHO, 2015)

New-born death rates in the African region are the highest globally, and based on the estimates, perinatal mortality rate in the Sub-Saharan region is 7.6% of live births (Chinkhumba, Allegri, Muula & Robberstad, 2014:1). In less privileged countries in Africa, such as Zambia, there was a high probability for underestimation of perinatal deaths due to substantial underreporting and insufficient reporting structures, particularly for home-based deliveries at community scale (Central Statistical Office, 2007:38; Lawn et al., 2016:587). The Central Statistical Office (CSO) in Zambia has revealed that perinatal mortality rate is 3.8% per pregnancies (CSO, 2007). Perinatal deaths include stillborn babies of over 28 weeks of development and mortality taking place within the first week after birth. According to WHO, it was projected that, worldwide in 2000, perinatal conditions took more than 2.4

million lives, representing 4.4% of all deaths globally (Iqbal, Majid, Muhammad & Khan, 2014:333).

The perinatal mortality rate (PMR), which means the number of perinatal deaths per 1,000 births, has been viewed as a pointer of the quality of prenatal, obstetric and neonatal care in an area, which also reflects the maternal health and socio-economic set-up (Mgawadere, Unkels, Adegoke & Van den Broek, 2014:291). Although perinatal mortality is less than 0.5% of the normal life expectancy, there is a higher death rate in this period than during the next 30-40 years of life in many developing countries (Surekha & Kumar, 2012:10). Perinatal mortality was a subtle indicator of the value of facilities offered to pregnant women and their infants.

Although perinatal mortality (PNM) was regarded as avertible, worldwide a projected 6.3 million infants die in the perinatal period per annum. Almost all 98% of these deaths happen in developing countries (Msemo, Ashish, Data, Moyo, Evans, Smith, Perlman and Niermeyer, 2013:e353). According to (WHO, 2015), perinatal mortality rate is 6.2% of births in Africa, compared to an estimated rate of 1% of births in the developed countries, whereas countries like Sweden and the rest of the industrialised sector sustain a neonatal mortality rate of 2–3/1,000, it is not unusual that this rate ranges to over 60/1,000 in the low-socio economic parts of the world, however ninety-nine (99%) of all children who demise during the first 4 weeks of life are doing so in the low-socio economic parts of the world, especially in sub-Saharan Africa and South Asia (Malqvist, 2011:7). Several deaths were connected to inadequate medical and nursing intervention during birth, therefore, providing expert care to mothers during pregnancy, as well as during and after birth and in particular in the first 28 days, critically contributes to child survival (Ntenda, Chuang, Tiruneh & Chuang, 2014:125).

Prior research also acknowledged socio-economic, maternal, cultural, household, environmental, biological, and health service as factors affecting infant mortality rate (Ntenda et al., 2014:127). New-born deaths and stillbirths are caused by poor maternal health, inadequate care during pregnancy, inappropriate management of glitches during gestation and delivery, poor hygiene during delivery and the first life-threatening hour after birth and lack of new-born care (Hodgins, Tielsch, Rankin, Robinson, Kearns, & Caglia. (2016:49) The information about the distribution, causes, and time trends of new-born mortality is very important to a country's health strategy because the infant mortality rate has been broadly used as an overall guide of population health in many countries (Ntenda et al., 2014:131).

Risk determinants for perinatal mortality entails maternal age, race, marital status, parity, birth weight, gestational age at birth, labour complications, rates of antenatal visits, previous challenges like still birth and new-born deaths and various other socio-economic factors (Marchant, Willey, Kartz, Clarkes, Kariuki, Kuile., 2012:292).

South Africa is one of the countries with decreasing rates of infant mortality, although it is encouraging, South Africa still has a high mortality rate compared to other developing countries with low income category (Lloyd & de Witt., 2013:518). Maternal, perinatal and under-5 mortality in South Africa continues to be extremely high and a PNMR of 3.14% in 2008 was almost halfway between the normally acceptable rates for developed and developing countries (Lloyd & de Witt., 2013:519).

South Africa obviously has the financial resources essential to reduce infants' mortality. The health organisation and delivery system of South African still needs a lot to be done in order to refine infants' health care (World Health Organization, 2013). To initially prevent perinatal mortality may perhaps be possible through concurrently developing medical care for babies and mothers in order to meet the MDG for child survival, despite high mortality and poor health (World Health Organization, 2013). Usually, the inadequacy of information along with low quality services and uncommitted health care providers causes avoidable loss of new-borns. In light of this view, this study is aiming to find out the recent perinatal mortality rates, associated factors and address them where possible. This study is being done in Vhembe district in Limpopo province.

Table 1.1 shows the health service delivery platform in the Vhembe district. The health facilities are managed by provincial Department of Health (DoH). Makhado and Thulamela appear to have well distributed Primary Health Care (PHC) facilities whilst Mutale based on its population, seems to be in need of additional facilities. Musina has a low population and the available facilities are considered reasonable to render services according to the Provincial District Health Plan 2013/2014.

Table 1.1 Facility type per sub-district

Sub-District	Service Provider	Clinic	Community Health Centre	District Hospital	Mobile Service	Satellite Clinic	Grand Total
Thulamela	Municipality	49	3	2	15	0	69
Makhado	Municipality	44	4	3	16	0	67
Mutale	Municipality	16	1	1	6	0	24
Musina	Municipality	3	0	0	2	0	5
Total number of facilities		112	8	6	39	0	165

Adopted: Provincial District Health Plan 2013/2014.

Generally, the province has a high mortality rate for children under the age of five as compared to other age groups. The high under five mortality rate in the province was a result of the combination of HIV/AIDS and other communicable diseases, perinatal conditions, lower respiratory infections and nutritional deficiencies (Nojilana, Bradshaw, Van Wyk, Msemburi, Laubscher, Somdyala, Joubert, Groenewald & Dorrington, 2016:642).

Table 1.2 shows the perinatal mortality rates of the seven hospitals found in the Vhembe District for the period January 2016 to March 2017. It was of great important to note that the sampled three hospitals in the current study are also focused in the top three of the highest perinatal mortality rates among the seven hospitals.

Table 1.2: Vhembe Health District (January 2016- March 2017 Perinatal mortality rate)

Name of Hospital	Number of Live births	Perinatal mortality rate per 1K
Tshilidzini	2655	38.1
Messina	810	26.8
Louis Trichardt	787	32.5
Malamulele	2192	31.4
Elim	1887	42.7
Siloam	1553	27.8
D Fraser	2331	41.1

Adopted: Provincial District Health Plan, Department of Health 2016/2017.

1.3 PROBLEM STATEMENT

De Vos, Strydom, Fouche and Delport (2011:108) define problem statement as a part that captures the essential focus of the study. On the other hand Brink, Van der Walt and Van Rensburg (2013:61) describe the research problem as an area of concern in which there is a gap or a situation in need of solution, improvement or alteration, or in which there is a discrepancy between the way things are and the way they ought to be.

High perinatal mortality rates in developing countries such as South Africa, are a major factor in contributing to high perinatal mortality rates in selected public hospitals. However, the focus should be on the implementation of sustainable measures to improve perinatal mortality rates, and ultimately reducing under five mortality by 2030. It becomes difficult to reduce child mortality or under five mortality if perinatal mortality rate is still high. Vhembe district of Limpopo province in South Africa is of no exception owing its trend of high number of perinatal deaths which are estimated at ±372 per month Refer to table 1.3 below.

Table 1.3: Hospitals in Vhembe District

Hospitals	District/Regional Hospitals	No. of deliveries per month	No. of PNMR per month
Donald Fraser Hospital	District Hospital	471	113
Elim Hospital	District Hospital	347	46
Louis Trichardt Memorial Hospital	District Hospital	167	10
Malamulele Hospital	District Hospital	428	24
Musina Hospital	District Hospital	126	11
Siloam Hospital	District Hospital	269	47
Tshilidzini Hospital	Regional Hospital	495	121
Total		2303	372

(District health information system, Vhembe district, 2014/2015)

Despite all the government's efforts on the reduction of perinatal mortality rates in public hospitals, perinatal mortality rates remain high in South Africa and particularly in rural areas such as Vhembe district of Limpopo province. The government played a major role to ensure that all pregnant women and infants under the age of 5 years receive free health care services. This was done by training doctors and midwives on the Essential steps in managing Obstetric Emergencies (ESMOE) skills, Helping Babies Breath (HBB) skills, Limpopo Initiative for New-born Care (LINC) a provincial new-born outreach project which focuses on management of sick and small new-borns, supported by the Limpopo Provincial Department of Health, UNICEF and Save the Children and free management of pregnant women and children under the age of six, national programmes such as the use of Basic Antenatal Care (BANC) and utilising maternal guidelines when managing complications. Additionally, by holding a perinatal review meeting (PNRM) on a monthly basis as a key component of the audit process that aims at improving the quality of perinatal care and perinatal outcomes.

In Limpopo province, the perinatal mortality rates remain high despite the efforts of health care services. Based on that, the intention of the current study was to assess factors contributing to high perinatal mortality rates in the selected public hospitals of Vhembe district in Limpopo province, South Africa.

1.4 RATIONALE OF THE STUDY

Perinatal mortality is a problem worldwide. According to MDG country Report (2015:4), South Africa is still facing challenges regarding the MDG goal set by UN, although there was a slight progress in reduction of U5MR; however MDG-4 were not met by 2015. Proceeding to the global development agenda through the Sustainable Development Goals Vision 2030, the study concentrated on assessing factors contributing to high perinatal mortality in Vhembe district of Limpopo province to reduce child mortality and improve the health of children. The results of the study shall be of help to all midwives and Accoucheur, National perinatal and Neonatal Morbidity and Mortality Committee (NapeMMCo) as decision makers and to other researchers as it produces valued data.

1.5 PURPOSE OF THE STUDY

The purpose of this study was to assess the factors contributing to high perinatal mortality rates in the selected public hospitals of Vhembe district in Limpopo province, South Africa.

1.6 OBJECTIVES OF THE STUDY

Research objectives are defined as clear, concise, declarative statements that are written in the present tense (Brink et al., 2013:61); therefore objectives of the study should be clearly stated and specific in nature (De Vos et al., 2011:108).

The objective of the study was to:

- Determine the knowledge of midwives regarding the care of women in labour in selected public hospitals of Vhembe district.
- Assess the attitudes of midwives towards women in labour.
- Identify the availability and use of guideline/protocol by midwives to manage complications during labour.
- Examine staffing and working factors that contribute to high perinatal mortality rates in the selected public hospitals of Vhembe district.

1.7 RESEARCH QUESTIONS

Brink et al (2013:86) regard research question as being synonymous with research problems, except that they are stated in question form.

In order to achieve the stated purpose of this study, the following research questions were developed:

- Do midwives and Accoucheurs have knowledge pertaining the care of a woman and baby during antepartum, intrapartum and postpartum?
- What attitudes do midwives have in terms of caring for a woman in labour?
- Are there any guidelines/protocols used by midwives in the management of complications during intrapartum?
- How do staffing and workload contribute to high perinatal mortality rates in the selected public hospitals of Vhembe District, South Africa?

1.8 SIGNIFICANCE OF THE STUDY

When completed, this study was important in a number of ways as it was to benefit the following groups of people:

- Midwives – would improve their practices through the recommendations made from their shortfalls in what they are expected to do when assisting mothers in labour. By identifying the areas of weaknesses in the utilisation of policies and regulations and lack of knowledge in key areas, this study would act as a launch pad in many important remedies to the existing situation for many midwives.
- The Vhembe District Health department would use this study to address shortfall within their policies and regulations so that a common way of doing things in maternity wards will be followed. Secondly, the department would try to find ways of rationalising the operations of the midwives so that they implement what is needed to assist expecting mothers. The Department will also design and implement courses as compulsory for midwives in order to benefit the patients. The study was important in that it was to provide information to the health care practitioner regarding the factors contributing to high perinatal mortality rates in selected public hospitals in Vhembe District of Limpopo province, South Africa. The study findings were meant to assist the Department of Health to introduce measures and reinforce existing policies and

strategies on obstetric and neonatal care in Limpopo province. The recommendations from the study shall assist policy makers to come up with evidenced based care guidelines that shall assist to improve the health of infants and promote quality life for the neonates in Limpopo and South Africa. The health sector shall also benefit from the study by reducing child mortality rate. There will be a common way of doing this in maternity wards.

- Pregnant mothers would receive improved service when midwives use new skills and knowledge in assisting them. By helping the expecting mother to deliver safely, this would reduce the mortality rate to a sustainable level in the public hospital. Use of standard procedures and guidelines by skilled midwives will promote safe delivery and increase the number of live babies at birth.
- Limpopo Department as a parent health department will be aware of the factors that contribute to high mortality rate among newly born babies and present policies to counter the factors. The Provincial Department of Health will introduce measures and reinforce existing policies and strategies on obstetric and neonatal care in Limpopo province.
- Nursing Education Department needs to be aware of the shortfall of the courses they offer and also know who takes them or not so that they can make it compulsory for all midwives to be involved in staff development. This study will provide the basis to start the programmes for the staff development of the practising nurses.

1.9 THEORETICAL FRAMEWORK

This study is guided by the Ecology Model of Health Promotion (EMHP), a variation of Bronfenbrenner's Ecological Systems Theory (Richard, Gauvin & Raine, 2011:307-326), and a detailed description is given in Chapter 2.

1.10 RESEARCH METHODOLOGY

A research methodology can be defined as the process that consists of the design, setting, sample, methodological limitations, and the data collection and analysis techniques in a study (Burns & Grove, 2011:488). A research study can be successfully conducted using an appropriate research methodology.

1.10.1 RESEARCH DESIGN

Research design is the plan, receipt or blueprint for the investigation and provides a guideline according to which a selection can be made of which the data methods will be the most appropriate to the researchers goal (De Vos, Fouche & Delpont, 2012:110). The researcher used a quantitative, descriptive, exploratory and cross-sectional design to assess factors contributing to high perinatal mortality rates at selected public hospitals, described in Chapter 3.

1.10.2 POPULATION

A population is the entire group of persons or objects that is of interest to the researcher or that meet the criteria that the researcher is interested in studying (Brink et al., 2013:131). In this study, population comprised of all registered midwives who had been working in maternity wards for a period of two years or more at selected public hospitals.

1.10.3 SAMPLE AND SAMPLING

A sample comprises elements or a sub-set of the population considered for actual inclusion in the study, or it can be viewed as a sub-set of measurements drawn from a population in which we are interested (De Vos et al., 2011:223). In this study, sample comprised of midwives and Accoucheur working in maternity wards with two years of working experience at selected public hospitals.

Sampling means selecting a given number of subjects from a defined population as representative of that population (Pandey & Pandey, 2015:41). However De Vos et al., (2011:223) refer to sampling as means of taking a portion or a smaller number of units of a population as representative or having particular characteristics of that total population. In this study, non-probability convenient sampling for the midwives was done using

Conchrane's formula. Details are given in Chapter 3.

1.10.4 STUDY SETTING

Vhembe is one of the five districts of Limpopo province in South Africa and it covers an area of 25,597.42 km². It is located on the northern side of the country and shares its northern border with Beitbridge district in Matabeleland South, Zimbabwe.

The study was conducted in Vhembe district of Limpopo province in South Africa owing to its trend of serving a large sum of deliveries which are estimated at ± 400 per month, refer to Table 1.4.

Table 1.4: Hospitals in Vhembe District

Hospitals	District/Regional Hospitals	No. of deliveries per month
Donald Fraser Hospital	District Hospital	471
Elim Hospital	District Hospital	347
Louis Trichardt Memorial Hospital	District Hospital	167
Malamulele Hospital	District Hospital	428
Musina Hospital	District Hospital	126
Siloam Hospital	District Hospital	269
Tshilidzini Hospital	Regional Hospital	495
Total		2303

(District health information system, Vhembe district, 2014/2015)

1.10.5 DATA COLLECTION

Data collection is the process of gathering the required raw information for each selected unit in the investigation. During data collection, elements under study are carefully chosen and their contribution to the study is pursued (Flick, 2014:37). The actual steps of collecting the data are precise to each investigation and they depend on the research design and measurement techniques. Data may be collected by witnessing, examining, measuring, questioning or recording, or any combination of these procedures, and the researcher is actively involved in this procedure either by collecting data or supervising data collectors.

In this study data was collected using self-administered questionnaires to meet the objectives of the study. Details are given in Chapter 3.

1.10.6 ETHICAL CONSIDERATIONS

Ethics is defined by Bhattacharjee (2012:137) as conformance to the standards of conduct of a given profession or group. Such standards are often defined at a disciplinary level through a professional code of conduct, and sometimes enforced by university committees called Institutional Review Board (Bhattacharjee, 2012:137).

The researcher confirmed firm compliance with ethical principles, relevant to protecting the rights of the respondents, institutions where data was collected and scientific integrity were upheld throughout the study. Authorisation was sought and obtained from the Department of Health, concerned health services and University of Venda before data collection initiated.

Details on ethical consideration are presented in Chapter 3 of this dissertation.

1.10.7 DATA ANALYSIS

Data analysis embraces a whole range of activities of both the qualitative and quantitative type. It is a usual tendency in behavioural research that much use of quantitative analysis is made and statistical methods and techniques are employed (Pandey & Pandey, 2015:70).

The analysis of this quantitative data was captured and managed by Microsoft Excel 2013, making it possible to be imported into SPSS (Statistical Package for Social Sciences 23.0) for analysis purposes, data analysed presented by figures, percentage, frequency, pie charts, bar graphs and tables with the assistance of the statistician to analyse data. The concept of data analysis is discussed in detail in Chapter 3 of this dissertation.

1.11 RELIABILITY AND VALIDITY

Reliability is the extent to which the measure of a concept is consistent or dependable (Creswell et al., 2017:7) whereas Pandey and Pandey (2015:21) state that any measuring method or tool is said to be effective when it measures what it is expected to measure. In the following section, the validity and reliability of this research are discussed.

Content validity is a valuation of how sound a set of scale items matches with the applicable content domain of the construct that it is trying to measure (Creswell et al., 2017:8). However

Kumar (2014:167) state that content validity is also judged on the basis of the degree to which statements or questions represent the issue they are supposed to measure, as judged by the researcher, readers and experts in the field (Kumar, 2014:167). Content validity was improved by obtaining inputs from the researcher's supervisor, and from four senior midwives working in the Labour Unit and Neonatal unit services from other hospitals. At least five experts in midwifery were consulted and the instrument was only used upon agreement with these experts that every item in the questionnaire was relevant for the purpose of the study (face validity); and was relevant for obtaining biographic information about the participants or about their perceptions on the factors contributing to high perinatal mortality rates in the study area (content-related validity). Content validity was further explored by comparing findings obtained in response to different items and no major inconsistencies were found.

Reliability refers to the stability or consistency of the measurement. If the same variable is measured under the same circumstances, a dependable measurement procedure produces identical measurements and a measuring instrument is able to yield reliable numerical results each time it is applied (De Vos et al., 2011:162), whereas Burns and Grove (2011:374) point out that reliability is concerned with the stability of the measurement method. To ensure reliability, a pilot study was carried out by administering the questionnaire to 10 respondents, who were excluded from the actual study. At a subsequent meeting of these 10 persons, their responses were discussed and compared, and no marked differences were identified. No items were found to be awkward in the instrument during the pretesting phase.

1.12 DEFINITION OF TERMS

1.12.1 Infant mortality rate (IMR)

Infant mortality rate refers to the probability rate of death in children before their first birthday (World Health Organization, Global Health Observatory (GHO) (2015:23)). For the purpose of the study the term described the number of deaths broken down into early neonatal (0-6 days) and late neonatal death (7-28 days). However neonates from 1 month up to 4 years 11 months are not included in the study moreover counted as infant under 5 mortality rate according to MDG-4 set goal.

1.12.2 Midwives

A midwife is a professional in health care who has undergone training, specializing in pregnancy, child birth and to assist women in child birth, postpartum women's sexual and reproductive health and new-born care (Mosby, 2016:168). In this study midwives are referred to as trained professionals assisting women in child birth and care of new-born, recognising possible abnormalities, managing complications and refers to more appropriate advanced levels of care.

1.12.3 Mortality rate

It is the ratio of the total number of deaths from one or any cause, in a year, to the number of people in the population or a number of deaths within specific time period per disease and age group (Mosby, 2016:200). In this study mortality rate refers to total number of deaths of new-born per live birth in a given time period.

1.12.4 Neonatal mortality rate (NMR)

Neonatal mortality rate refers to the probability of children dying from birth to 28 days after birth, World Health Organization, Global Health Observatory (GHO) (2015:23). For the purposes of this study the term described the total number of neonatal deaths of infants with a gestational age of 28 weeks or birth mass of 1000g or more per 1000 live births in a selected hospital of Vhembe district of Limpopo province.

1.12.5 Perinatal mortality rate (PNMR)

The perinatal mortality rate refers to the probability of children dying from 24 weeks gestation up to seven days after birth. It includes all still births (Blencowe, Cousens, Jassir, Say, Chou, Mathers, Hogan, Shiekh, Qureshi, You & Lawn. 2016:98). In this study, the perinatal mortality rate defined as number of stillbirths and neonatal deaths with a gestational age of 24 weeks and more or birth mass of 500g or more, calculated per 1000 deliveries, in a selected hospital of Vhembe district of Limpopo province.

1.12.6 Public hospital

A public hospital or government hospital is a hospital which is owned by a government and receives government funding. In some countries, this type of hospital provides medical care

free of charge, the cost of which is covered by government reimbursement (Von Holdt & Murphy, 2007:1). In this study public hospital is a place where pregnant women are being cared for, in terms of antenatal care, delivery or labour and postnatal care including new-born.

1.13 SCOPE OF THE STUDY

The study was conducted in three selected public hospitals and assessments done on midwives with two or more years of working experiences from May 2017 to July 2017.

Midwives with less than two years of working experience were excluded from the study.

1.14 PROPOSED THEORETICAL FRAMEWORK: THE ECOLOGY MODEL OF HEALTH PROMOTION

It has become a standard practice that a research study be guided by a well-known theory, a theoretical framework, hence the use of the EMHP, among many available models used in health research. Ecological models have become a common tool in public health research (Golden & Earp, 2012:364). According to Richard et al., (2011:307-326), ecological approaches to health issues and ecological models of intervention have become distinctive features of disease prevention and health promotion in public health. This implies that research studies that adopt ecological models of health promotion conceptualise good health as depending on the environments and individual factors at play (Blas & Kurup, 2010). To understand the EMHP, detailed description and application of the components are elaborated in Chapter 2, Figure 2.1.

1.15 LIMITATION OF THE STUDY

Study findings cannot be generalised to hospitals excluded from the study as it is the description of the population from the selected hospitals. The findings are not reliable because the attitudes of midwives towards women in labour were mixed, less positive than negative; the researcher thinks the midwives did not display honesty.

1.16 OUTLINE OF THE STUDY

This chapter described the orientation of the study, background information, problem statement, rationale of the study, aim and purpose of the study, objectives of the study, research questions, significance of the study, theoretical framework and introduction of research methodology, definition of terms, ethical considerations and reliability and validity of the study.

Chapter 1 introduced the study by giving the background and describing the problem statement

Chapter 2 discusses the literature review assumed for the study.

Chapter 3 describes the research methodology.

Chapter 4 presents data analysis, presentation, and interpretation of the results.

Chapter 5 presents overall of the study, conclusion and recommendations.

1.17 SUMMARY

This is an introductory chapter presenting an overview of the study which covers the introduction and background of the research problem, problem statement, aims, objectives, significance and research questions, theoretical framework and introduction of research methodology, definition of terms, ethical considerations and reliability and validity of the factors contributing to high perinatal mortality rates in selected public hospitals in Vhembe district of Limpopo province, South Africa. The next chapter will provide an overview of reviewed literature relevant to the proposed study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews literature on factors contributing to perinatal mortality in Vhembe district, South Africa. Purpose of the literature review for this study was to assess factors contributing to high perinatal mortality rates in Vhembe district. The EMHP is also fully elaborated as it applies to this study. The following will be used to provide context for the research, and give a reference against which the findings will be compared to assess their validity.

- The Ecology Model of Health Promotion and its sections
- The main indicators of child mortality
- Factors contributing to perinatal mortality and morbidity
- Approaches to reducing perinatal mortality and morbidity.

2.2 MAIN INDICATORS OF CHILD MORTALITY

As stated by Blencowe et al. 2016:98; Shung-King and Proudlock (2002:75), the primary indicators of child mortality are:

- The perinatal mortality rate: Which alludes to the likelihood of children who die from 24 weeks gestation up to seven days after birth. It comprises all still births;
- Neonatal mortality rate: Which alludes to the likelihood of children who die from birth to 28 days after birth. This only consists of babies born alive and not stillborn;
- Infant mortality rate: Which refers to the probability of children dying before their first birthday;
- Under-5 mortality rate: This averts to the possibility of children dying before 5 years of age, including the birth to 1 year interval;

- Child mortality: This averts to the possibility of children dying aged one up to age four. This differs from the under-5 mortality in that it does not comprise the birth to one year space; and

2.2.1 Calculating mortality indicators

All child mortality measures, excluding the perinatal mortality rate are preconceived using the number of children who die out of a thousand births within the space of one year. The perinatal mortality rate comprises the stillbirths also. In order to preconceive exact child mortality measures, births and deaths need to be recorded and reported accurately (Blencowe et al., 2013:14).

2.2.2 Perinatal Mortality Rate (PNMR)

WHO defines perinatal mortality as the number of stillbirths that happen after the pregnancy is 22 weeks old (154 days), including the death rates in the first seven full days after the child is born (early neonatal deaths), per 1000 total births. The WHO went ahead to define stillbirth as the death of a foetus without the chance of survival with a birth weight of 500 g or more at more than 22 completed weeks of gestation (Tanaka, S., Stock, S.J., Yamamoto, Y., Kondejewski, J. and Olson, D.M.2010:322; Blencowe et al., 2013:14). Stillborn definitions based on gestational age and weight often result in inaccuracies. For instance, in low-income countries, where access to prenatal care and ultrasound is limited, correct gestational ages for many women are unknown, and the rate of intrauterine foetal growth restriction (IUGR) is high, leading to inappropriately low weight for gestational age.

2.2.3 What do Child Mortality Indicators Tell Us?

Child mortality indicators explain how well a country is doing in terms of respecting, promoting and protecting children's rights; principally their rights to survival and development, equality, food, water, sanitation, health care, shelter and education. They also assist to discover specific sectors in the country that are in dire need. Accordingly, a single national independent medical review (IMR) or under-5 mortality measure is insufficient. It has to be sorted by province, by district and preferably, per community (Blencowe et al., 2013:14).

Child mortality indicators give room for juxtaposition among countries with related rates of income. Differentiating countries with similar income countries helps in measuring a country's achievement with the aim of promoting child well-being. Finally, if the factors of death in

each age group are well reported, it assists in recognizing the kind of intercession that are required to reduce child deaths (Blencowe et al., 2013:14).

Perinatal mortality in handpicked flourishing countries has reduced over the last 10 years (Tanaka et al., 2010:322). Meanwhile in low income countries, perinatal deaths still hang on a thread, with two-thirds of neonatal deaths happening in the perinatal period (Yiga, 2016:12). Notwithstanding, perinatal mortality (PNM) is avoidable; worldwide, approximately 6.3 million babies still die in the perinatal period yearly. Practically all (98%) of these deaths happen in the developing countries (Yiga, 2016:12). According to WHO (2015) perinatal mortality rate stands at 62 per 1000 births in Africa, unlike an estimated rate of 10 per 1000 births in the developed countries.

Although South Africa seems to have a small mortality rate, comparatively, it is unexpectedly higher than that of many other developing countries that are on the same income level and even higher than many countries that fall into a lower income category (Blencowe et al., 2013:5). South Africa plainly does have the financial resources mandatory to reduce deaths of children. The organisation and delivery of the South African health system and other sectors that influence on health, e.g. social development, water, housing, transport and finance still have a long way to go in ameliorating child welfare (Blencowe et al., 2013:5).

2.3 FACTORS CONTRIBUTING TO PERINATAL MORBIDITY AND MORTALITY

A number of risk causes have been identified to be the cause of negative outcomes of pregnancies inclusive of perinatal deaths. Some of these are maternal age at first delivery; short birth intervals (less than 24 months), maternal nutrition, and use of maternal health care services, more especially prenatal and delivery care (Basinga, Gertler, Binagwaho, Soucat, Sturdy & Vermeersch, 2011:1428). Parental, social and demographic attributes, maternal diseases, poor antenatal care, challenges during labour and delivery and neonatal states are some of the factors known of perinatal morbidity and mortality (Mmbaga, 2013:27).

2.3.1 Social and Demographic characteristics

Parents' socioeconomic background and ethnic components such as teaching (both maternal and paternal), employment status, wealth, faith as well as mother's habitat and environment (depicted by region of residence) are likely to influence perinatal mortality through maternal health condition as depicted by the nutritional status of the female parent. In addition maternal demographic features such as age, parity, pregnancy interval and mode of delivery may directly influence perinatal mortality (Basinga *et al.*, 2011:1428).

A socially disadvantaged life is associated with little or no perinatal outcomes such as neonatal care admission, absence of birth weight and perinatal mortality (Mmbaga, Lie RT, Kibiki, Olomi, Kvåle & Daltveit, 2011:68). In developing countries, associating low social status and poor pregnancy outcome may be the result of lack of access to health care, unhealthy diet, infection, poor maternal health and a high fertility rate in poor families (Mmbaga, 2013:27). Maternal characteristics such as short stature and being unhealthy have self-sustaining negative outcomes on pregnancy outcome such as labour challenges in association with Cephalo-pelvic disparity in women with short physique, low birth weight in association with intrauterine increase limitation in underweight women and perinatal mortality in both conditions (Mmbaga *et al.*, 2011:68). Maternal short stature may be due to social lack at childhood, and can therefore be seen as a socioeconomic factor (Mmbaga, 2013:23). Other maternal features connected with perinatal morbidity and mortality includes; birth of the first child, teenage mother, and maternal age above 35 years. Also paternal characteristics are associated with poor pregnancy outcome, such as low or no education, and unskilled/low skilled worker (Mmbaga *et al.*, 2011:68).

There are also certain unnoticed features (genetic make-up of the parents, and features that are linked with delivery and those associated with after delivery) in connection to mother and child that may also have an effect on perinatal mortality (Basinga *et al.*, 2011:1421).

A study by Black, Victora, Walker, Bhutta, Christian, De Onis, Ezzati, Grantham-McGregor, Katz, Martorell & Uauy (2013:167) observed poor maternal nutrition as having a high risk for perinatal mortality in other developing countries. It was noticed that, gaining weight during pregnancy seems to be necessary and reductions of perinatal deaths linked with high maternal weight have been displayed, proposing that nutritional involvement during pregnancy is necessary. In another research done in rural Kenya, it was discovered that most perinatal difficulties increase remarkably by maternal and environmental influence. Among these were poor pregnancy care, malaria and anaemia during pregnancy, poor socioeconomic

background of the mother and poor sanitary conditions of the house (Balarajan, Ramakrishnan, Özaltın, Shankar & Subramanian, 2011:2123).

2.3.2 Maternal Health Conditions

An additional important element impacting new-born deaths is impoverished maternal health, mainly during pregnancy, delivery and the early postpartum state. Numerous pregnant women suffer from malnutrition, are exploited and may still be recuperating from a former pregnancy, emerging from a short period between pregnancies. For numerous mothers, health care during the crucial stage – especially during and instantly after birth is almost not existing (UNICEF, 2008:34).

Maternal hypertensive disorders such as hypertension before pregnancy, pregnancy-induced hypertension and preeclampsia/eclampsia elevate the danger of preterm delivery, low birth weight, intrauterine growth limitation and perinatal death. In developing countries where detection and therapy is insufficient, it is assumed that the danger of perinatal is not enough, it is assumed that the danger of perinatal death after a pre-eclamptic pregnancy is about 13%, elevating to 28% if the woman develops eclampsia (Mmbanga et al., 2013:27).

Pre-gestational and gestational diabetes are recognized dangers for neonatal morbidity and stillbirth (Mmbanga, 2013:23). Maternal overweight and obesity increase the risk of high birth weight (>4000g), neonatal care admission, and stillbirth (Balarajan et al., 2012:2123). Difficulties linked with maternal obesity comprise of gestational diabetes and preeclampsia (Balarajan et al., 2012:2135). A systematic review and meta-analysis indicated that in obese women there is a high danger of preterm delivery after induction or caesarean section because of pregnancy difficulties (Mmbanga, 2013:27).

The association between maternal age and the dangers of delivery related perinatal death is less well-established, even though there are now facts that adult females aged 40 and above are at more than twice the risk of facing high danger of delivery in connection with perinatal death at term. This surplus is secondary to deaths due to intrapartum anoxia and was self-reliance of parity. The biological basis of this connection is not clear (Cloke & Pasupathy, 2013:323) whereas indicated that there are two major hypotheses; firstly, older women are likely to have placental function that is not normal, rather elevating the danger of anoxic

associated events. Secondly, on that point is a linear increase in the danger of operative delivery with elevating maternal age. This may be ascribed to a reduction in unaffected contractility of myometrial muscle fibres as the facts by in vitro studies. In developed countries, high rate of obesity is an important public health matter and it is linked with negative pregnancy outcomes, adding to it, gestational diabetes, pre-eclampsia, foetal macrosomia, caesarean delivery and antepartum stillbirth.

Other maternal elements having effect on neonatal health comprise of maternal infection like sexually transmitted diseases (including HIV/AIDS and syphilis), other infections like urinary tract infections, malaria, the age of the mother (less than 18 years or older than 35 years); a parity of more than 5, third trimester haemorrhage and difficulty in delivery (prolonged/obstructed labour) (UNICEF, 2008:34).

In developing countries, a substantial proportion of perinatal morbidity and mortality and fatality rate is connected to maternal infections such as malaria (Mmbanga et al., 2013:23). HIV infection and syphilis. An analysis of infectious disease in pregnancy, revealed that syphilis, HIV, malaria, toxoplasmosis and bacterial infections are major reasons for still-born in developing countries. Meanwhile, in developed countries, rising bacterial infections are the main infection causes of stillbirths (McClure, Dudley, Reddy & Goldenberg, 2010:635). As for HIV, the risk of perinatal deaths rise with unaddressed HIV infection. Relatively, for syphilis, the danger of foetal death is high for unscreened or untreated women, whereas, screened and treated women have no elevated danger (Mmbanga et al., 2013:27). A meta-analysis on malaria and perinatal mortality finalized that the danger of stillborn is higher in the existence of placental malaria (Kayentao, Garner, Van Eijk, Naidoo, Roper, Mulokozi, MacArthur, Luntamo, Ashorn, Doumbo & ter Kuile, 2013:604).

2.3.3 Antenatal Care

Appropriate and poor Antenatal Care (ANC) is commonly known to be a functioning system of preventing negative results in pregnant women and their babies (Binder, Johnsdotter & Essén, 2012:2028). The antenatal period clearly gives the chance to reach pregnant women with important health and welfare services, including their babies (WHO, 2014). Use of prenatal/antenatal and delivery care services have been prescribed for the management of critical birth outcomes like perinatal deaths (Cheptum, 2012:187). The inception of antenatal clinic visits during the pregnancy is very significant for the health of the mother and unborn child.

Mmbaga (2013:27) reports that in an analysis of 19 countries, women with the approved number of ANC visits know more about risk signs and more often delivered in a health facility. Other factors have been recognized as major predictors of perinatal mortality in connection with deployment of maternal health care services during pregnancy. Indirect causes that contribute to perinatal mortality, such as antenatal factors can be avoided by offering HIV counselling and testing to all pregnant mothers and initiation of antiretroviral treatment (ART) to HIV positive women, screening of infections, referral of high risk patients to regional hospitals, giving of steroids, availability of vaccines and appropriate response on poor foetal movements (Mannava, 2015:36).

2.3.4 Complications during Labour and Delivery

Vaginal delivery is the most common and safest type of childbirth. Caesarean section and vacuum delivery are other ways of delivery. Mode of delivery has also been identified as a risk factor for perinatal mortality (Caughey, Cahill, Guise, Rouse & American College of Obstetricians & Gynecologists, 2014:193). Neonatal mortality and maternal mortality are inversely associated with coverage rates of skilled birth attendance, emergency obstetric care (EmOC), and neonatal intensive care (Lohela, Campbell & Gabrysch, 2012:110). High rates of caesarean delivery do not necessarily indicate better perinatal care and can be associated with harm (Cheptum, 2012:190).

Obstructed/prolonged labour occurs in 3-6% of the pregnancies, is estimated to be responsible for 8% of all maternal deaths worldwide, and increases the risk of developing asphyxia, birth trauma and perinatal deaths (Mmbanga et al., 2013:27). Premature rupture of membrane (PROM) defined as rupture of membrane before onset of labour occurs in 10% of the pregnancies and increases the risk of preterm delivery and related complications, low birth weight, neonatal care admission and perinatal deaths due to sepsis (Di Renzo, Roura, Facchinetti, Antsaklis, Breborowicz, Gratacos, Husslein, Lamont, Mikhailov, Montenegro & Radunovic, 2011:667).

Consequences of complications are more serious in settings with poor monitoring of labour and in settings without proper emergency obstetric care (Mbaruku et al., 2013:358). A study in a setting with limited resources indicated that the risk of perinatal death was eight and thirteen fold after obstructed/prolonged labour and premature rupture of membrane, respectively (Black, Victora, Walker, Bhutta, Christian, De Onis, Ezzati, Grantham

McGregor, Katz, Martorell & Uauy, 2013:78). As for PROM, also maternal antibiotic prophylaxis before delivery is important to reduce risk of neonatal sepsis or respiratory distress syndrome (Mmbanga et al., 2013:23).

Intrapartum factors, monitoring and management of labour using partograph, foetal distress not detected during labour, prevention of infectious measures like hand washing before and after handling each and every patient and changing gloves with every patient, and delayed medical personnel for expert assistance are regarded as avoidable factors and substandard care which influence perinatal mortality (Ayres-de Campos, 2015:13).

2.3.5 Neonatal Conditions

Innumerable variables' impact shows following birth, i.e., care offered at neonatal, care after delivery (these influence care given to the new-born), child's struggle with the disease, open to disease conveyor (these have effects on child's health in the first week) affects a child's death or survival in the perinatal period (Basinga et al., 2011:1428).

Low birth weight is an outcome of preterm birth or intrauterine growth restriction, and is approximated to be an undisclosed component in about 60-80% of all neonatal deaths (Olusanya & Ofovwe, 2010:986). Notwithstanding, birth weight determined adverse neonatal mortality, the association between low birth weight and neonatal result is questioned (Wilcox, 2001:120). Globally, 15% of babies are born with low birth weight (<2500g) (132). Preterm birth (<36 weeks) and associated intricacies are accountable for over a million new-born deaths every year and the statistics are increasing (Mmbanga et al., 2013:25).

Numerous births facing high dangers of perinatal morbidity and mortality (Mmbanga, 2013:237). High birth weight babies (>4000g) are at risk of birth trauma, asphyxia, hypoglycaemia, neural tube defect and neonatal care admission. Breech or other abnormal appearance elevates danger of morbidity and mortality due to birth impairment and brain hypoxia as juxtaposed to cephalic presentation. Generally, male danger of morbidity and mortality go beyond female danger due to biology, preterm delivery and neonatal factors (Grote, Bridge, Gavin, Melville, Iyengar & Katon, 2010:1012). An evaluation of data from developing countries as reported in (Mmbanga et al., 2013:27) specify that on midpoint, boys are more likely to die in their first month of life as compared to girls by 28%.

Postnatal factors, inadequate neonatal resuscitation skills, inappropriate equipment in neonatal units, for example, continuous positive airway pressure (CPAP), no accessibility in neonatal intensive care unit (ICU) bed with ventilation are regarded as missed opportunities (Ayres-de-Campos et al., 2015:13). According to Patisson & Rhoda (2014: 24) in saving babies report stated that approximately 5% of perinatal deaths there was a direct human resources issue. This is perhaps greater than avoidable factors, missed opportunities and sub-standard care, for example delay in referring a patient. Unprofessional behaviour and attitude of doctors towards midwives was found by not responding to calls and lack of appropriate skills and knowledge.

2.4 APPROACHES TO REDUCE MATERNAL AND PERINATAL MORTALITY

Failure to diagnose and manage maternal conditions in an appropriate way were regarded as posing risk for the new-born results in perinatal mortality; however, an increase in perinatal mortality could be related to an increase in maternal mortality as well. Implementation of strategies to reduce maternal death has an impact on the reduction of perinatal mortality; solutions to health system problems and making improvements on availability of health services for 24 hours, shortage of skilled health providers for 24 hours, referral services to higher institutions, inadequate equipment in labour rooms and in neonatal unit and health workers communication skills and attitudes (Mannava, 2016:36).

Effective maternal and new-born health interventions exist, but they are too often not available to the poorest mothers and children amongst whom the highest mortality rates are found (Olusanya & Ofovwe, 2010:986). Low uptake of interventions amongst the poorest and most at risk mothers may be related to difficulty accessing health services due to cultural, logistical or financial barriers. This section will summarise the available evidence for the efficacy of key maternal and perinatal health interventions that can be delivered at community-level, and go on to explore factors related to maintaining their effectiveness at population level in poor communities.

2.4.1 Antenatal interventions

Prevention and management of health problems in pregnancy can be tackled through a wide range of antenatal interventions. In developing countries, problems during pregnancy are mainly related to nutritional deficits, infectious diseases and hypertension (WHO, 2014).

Antenatal care is one of the main pillars of the WHO's Safe Motherhood package (Mushi, Mpembeni & Jahn, 2010:14), but there is a lack of strong evidence as to the optimal content, frequency and timing of visits (Lewycka, 2010:70). Some of the most important components of antenatal care are tetanus toxoid vaccination, iron-folate supplementation, detection and management of pre-eclampsia and screening and treatment of infectious diseases like syphilis and malaria (Lewycka, 2010:70).

2.4.1.1 Nutrition-related interventions

Poor maternal nutrition in pregnancy is common in developing countries and contributes to anaemia, low birth-weight and other adverse pregnancy outcomes (Lewycka, 2010:71). Several nutrition-related, antenatal interventions have been tested that supplement the mother's normal diet, including supplementation with nutrients such as protein, iron, folate (periconceptual and antenatal), iodine, vitamin A (antenatal), zinc, calcium and multiple micronutrients.

2.4.1.2 Infection control and prevention

Malaria is a major problem in endemic countries and can cause severe complications in pregnancy, especially in primigravidae (first pregnancies) (McMurray, Packer, Akshay, Desai, Gong, Lefkowitz, Rizkala & Rouleau. 2014:993). HIV infection may impair the ability to acquire pregnancy-specific immunity to malaria, thus increasing the risk of complications (González, Ataíde, Nanche, Menéndez & Mayor, 2012:165). A Cochrane review reported that in malaria-endemic areas, malaria prophylaxis during pregnancy reduces maternal anaemia and improves birth weight. Benefits for the outcome of the infant were not clearly demonstrated, though perinatal mortality was reduced amongst low-parity women (Lewycka, 2010:73).

Genitourinary tract infections may cause intrauterine infections or inflammatory reactions leading to preterm birth, and can be a significant underlying factor in late foetal deaths (Lewycka, 2010:72). Case identification and treatment of maternal syphilis can have significant benefits for perinatal/neonatal outcomes, though uncertainty remains about what the optimal treatment regimens are (Lewycka, 2010:72). According to Walker (2010:1), implementing accessible, quality diagnostic and treatment services has been challenging, and further operational research is needed to investigate ways to achieve this.

Screening and treatment of asymptomatic bacteriuria (urinary tract infection without symptoms) has been associated with improved birth outcomes in developed countries, through reductions in low birth weight and preterm births, though the evidence is inconsistent (Lewycka, 2010:73).

Logistical and technical requirements are major barriers to widespread implementation in developing countries, and operational research would be needed to find ways to make such services more widely available (Marston, Lie, Bandyopadhyay, Zhang & Ghalsasi, 2011:178)

Premature rupture of membranes is strongly associated with infection, and this infection is related to preterm birth (Lewycka, 2010:73). Routine antibiotic therapy for preterm labour where membranes are intact has no clear benefit; however, where membranes rupture prematurely, antibiotic therapy has shown to be clearly beneficial in improving neonatal outcomes (Marston *et al.*, 2011:189).

There is overwhelming evidence for the benefits of tetanus toxoid immunisation on neonatal outcomes (Manske, 2014:1599). In addition, clean delivery practices and clean umbilical cord care contribute to infection prevention (Lewycka, 2010:72). Clean delivery kits may help promote hygienic practices in the community, but general behaviour-change interventions are necessary alongside the kits.

2.4.1.3 Maternal education

Finally, general maternal educational level is associated with better perinatal and neonatal outcomes, even after correction for socioeconomic status (Marston *et al.*, 2011:189), though there is little available evidence for effective strategies to improve educational capacity of mothers (Lewycka, 2010:73).

2.4.2 Intrapartum interventions

2.4.2.1 Community-based interventions

Interventions targeting prevention and management of complications during delivery are usually developed and tested for use in health facility settings. Although community-based interventions have been used as a means of promoting the use of these services (Koblinsky *et al.*, 2014:1215), few interventions have been developed for the management of complications of delivery in communities, despite the fact that many births happen at home. Other intrapartum interventions that have the potential for use at community-level relate to

infection prevention. One such intervention is maternal vaginal and new-born skin antiseptics, though meta-analyses have not shown significant reductions in postnatal infections or neonatal deaths in a hospital-based setting using chlorhexidine (Lewycka, 2010:74).

2.4.2.2 Facility-based interventions

Some obstetric complications cannot be managed or treated at community-level, and effective interventions in health facilities are included as components of basic and comprehensive emergency obstetric care (BEmOC & CEmOC), such as active management of labour by a trained health worker, caesarean section, blood transfusion, magnesium sulphate, antibiotics for premature rupture of membranes and corticosteroids for preterm labour. When deliveries are attended by trained health workers, interventions such as management guidelines can help to improve the quality of care provided (Lewycka, 2010:76).

In developed countries, caesarean delivery is the main risk factor for postpartum maternal infection (Declercq et al., 2007:86). Antibiotic prophylaxis following caesarean section significantly reduces the incidence of fever and infection in mothers, but there is uncertainty about the consequences for the baby (Lewycka, 2010:76).

For the treatment of pre-eclampsia/eclampsia, there is clear evidence for the benefit of magnesium sulphate, as compared to placebo or other drugs such as phenytoin or diazepam.

Three Cochrane reviews of magnesium sulphate found evidence for significantly reduced maternal deaths and reduced risk of further fits (Lewycka, 2010:75).

2.4.3 Postnatal interventions

There are many interventions to improve postnatal care that could be applied at community level. Even apparently quite sophisticated interventions such as new-born resuscitation, hypothermia prevention and care for preterm or low birth weight infants have been adapted and tested in community settings (Lewycka, 2010:76). There is preliminary evidence for the capacity of trained Traditional Birth Attendants (TBAs) or Community Health Worker (CHWs) to learn resuscitation skills and save new-born lives (Lewycka, 2011:77). However, in a six-country effectiveness study using the WHO Neonatal Resuscitation Programme to train TBAs, no impact on perinatal or neonatal mortality rates was seen, though the incidence of stillbirths was reduced (Lewycka, 2011:77). Simple drying, stimulation and warming as a part of routine neonatal care might be more straightforward as a way of promoting the basic elements of new-born resuscitation at community level (Marston et al., 2011:189). Benefits

of antiseptics of the umbilical cord has similarly limited evidence, though might be useful just as a way of replacing harmful practices such as cow dung application (Marston et al., 2011:189).

Other important neonatal infections with prevention and treatment interventions include ophthalmia neonatorum and pneumonia. The impact of training CHWs to recognise and manage neonatal pneumonia in communities in developing countries is significant (Young, Wolfheim, Marsh & Hammamy, 2012:8). Case management is superior to no case management, though the impact is limited given that distinguishing pneumonia from sepsis can be difficult and use of oral antibiotics alone may lead to under-treatment of infections. Nutritional interventions can be easily applied at community-level, and the benefits of breastfeeding have been extensively reviewed, showing reduced neonatal and infant morbidity and mortality with early and exclusive breastfeeding in community settings in developing countries (Lewycka, 2011:76).

2.5 THEORETICAL FRAMEWORK: THE ECOLOGY MODEL OF HEALTH PROMOTION

The purpose of a theory is to elucidate, predict, and understand a selected phenomenon and, in many instances, to challenge and expand existing knowledge within the limits of critical bounding assumptions (Jarvis, 1999; Ravitch & Matthew, 2017:34). Therefore, a theoretical framework becomes the structure that can hold or support a theory of a research study (Grant & Osanloo, 2014:18) and is used to introduce and describe the theory that explains why the research problem under study exists (Ravitch & Matthew, 2017:34). According to Herve (2013:45) a theoretical framework is used to limit the scope of the relevant data by focusing on specific variables and defining the specific viewpoint or framework that the researcher intends to consider in analysing and interpreting the data to be gathered. In this study, the theoretical framework was to assist the researcher to understand a number of concepts and variables according to their given definitions and also contribute to existing knowledge by validating or challenging theoretical assumptions as encouraged by Herbert (1984:102) and Herve (2013:55).

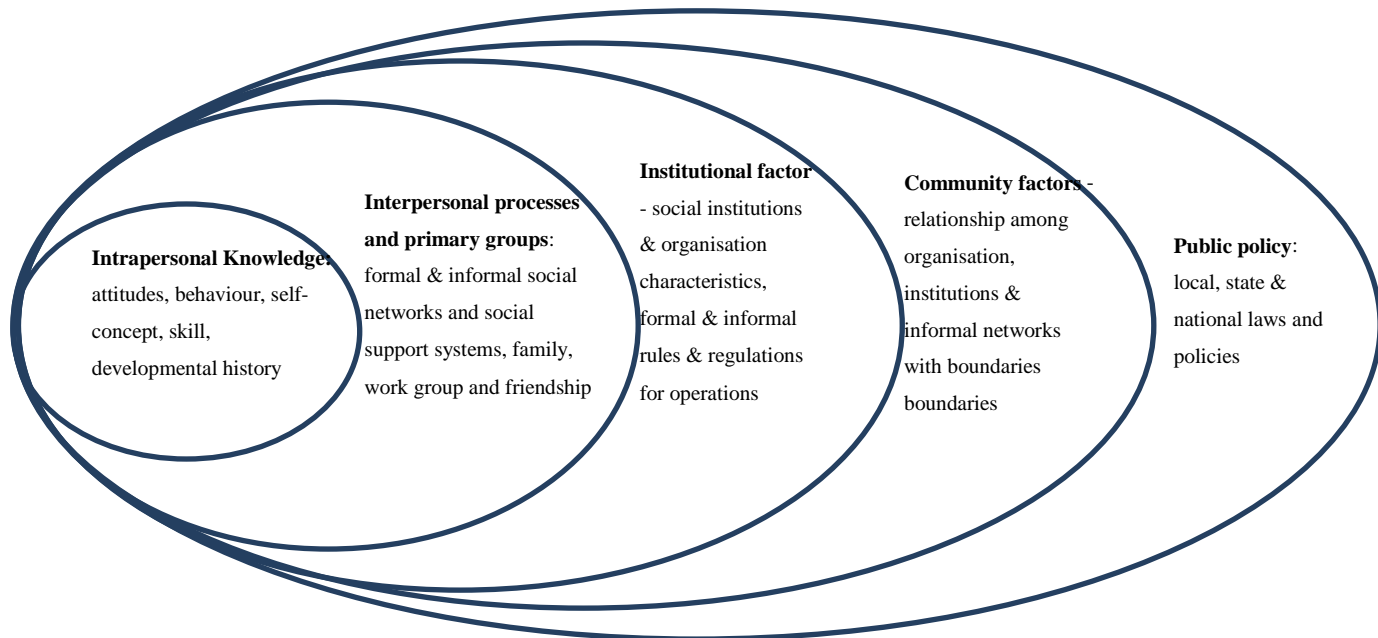


Figure 2.1: Ecology Model of Health Promotion

Adopted: McLeroy, Steckler and Bibeau (1988) adapted for this study

Integrating and conceptualizing the environment and other influences on the behaviour are key features of ecological models that have been applied in public health discourse (Fisher, 2008:5; Burke, Joseph, Pasick, Barker, 2009:55). In particular, an effort to disentangle and highlight the complex pattern of relationships between individuals/populations and their environments, health-promotion and public health researchers have stratified the environment into various levels of influences to allow for an initial foray into the issue of levels of analysis (Richard et al., 2011:307-326). According to McLeroy, Bibeau, Steckler and Glanz (1988:351-377) in the EMHP, patterned behaviour is the outcome of interest, and behaviour is viewed as being determined by:

- Intrapersonal factors - characteristics of the individual such as knowledge, attitudes, behaviour, self-concept, skill, and also development history of individual
- Interpersonal processes and primary groups - formal and informal social network and social support systems, including the family, work group, and friendship networks.
- Institutional factors - social institutions with organisational characteristics, and formal (and informal) rules and regulations for operations.
- Community factors - relationships among organisations, institutions, and informal next works within defined boundaries.
- Public policy - local, state and national laws and policies.

2.5.1 Intrapersonal factors

Intrapersonal factors refer to characteristics of the individual person such as knowledge, attitudes, gender, age, behaviour, self-concept, self-efficacy, financial resources, values, goals, expectations, skill, resiliency, coping skills, time management skills, health literacy and accessing health care skills, stigma of accessing counselling services and also development history of individual (McLeroy Steckler & Bibeau, 1988:352; Eddy, Donahue, Webster & Bjornstad, 2002:198). These factors are important for midwives to discharge their duties diligently to the satisfaction of the women in labour and community at large. Intrapersonal skills are important in that they can be used as a measure to determine how an individual is suitable for the job he/she is hired to do (Kang, Wei & Cole, 2013:12). In public hospitals, intrapersonal factors will determine how an individual nurse or midwife views her/his duties as service provider to assist mothers during their maternity period. The knowledge midwives have on different aspects of maternity health can improve their self-efficacy in doing their job or even cope well with harsh conditions that exist in many understaffed public hospitals. Good values and high expectations also contribute positively to one's expectations of providing good service during labour. The ability to deal with different complications in the wards also depend on coping skills, time management and good health literacy of new born babies and the consequences of negligence on the mothers. Good intrapersonal characteristics are also a key to the reduction of rate of mortality among newly born babies in public hospitals. In a study such as this, the ecological health promotion model plays an important role in providing the researcher with various factors to investigate with regard to existing high mortality rates in selected public hospitals in Vhembe district. While experience is a function of age, having too many elderly midwives makes it even more difficult for the hospitals to provide service timely.

2.5.2 Interpersonal processes and primary groups

Interpersonal relationship in nursing care can be defined as the interaction between two or more people who communicate, transfer values and energy from their roles in society (King, 2007:109-111; Lee & Doran, 2017). Interpersonal processes do not involve nurses only, but formal and informal social networks and social support systems, families, work group, and friendship networks. However in this study, it is limited to health care professionals, particularly midwives in maternity wards in public hospitals in Vhembe district. Engagement of midwives and pregnant women in maternity wards is important in promoting health of pregnant women and the foetus. Interpersonal processes are also important as they enable midwives to interact with each other and also the mothers in labour to communicate any

complications and what should be done. Midwives also need to interact with supervisors and their course organisers if they are to successfully perform their duties. Individual midwives with poor interpersonal relations always find it difficult to integrate with others and keep up to date with developments in the nursing profession (Borges, Moreira & De Andrade, 2017: 25:e2962). Midwives and expecting mothers form primary groups in the maternity wards and they interact many times on a daily basis. As primary members, midwives also communicate with their superiors and medical doctors, on the conditions of different pregnant women. For midwives to perform their duties effectively they need the requisite skills in midwifery which are acquired during their training and most importantly, through in-service courses by the provincial departments. Midwives form formal and informal networks amongst themselves and with the mothers in labour. Formal networks are important for communicating new developments in midwifery such as workshops and changes to the ways of practice. According to McLeroy, et al. (1988:359) social networks do not only influence the behaviour of individuals within the network but also the behaviour of individuals who are outside of the network linkages. Informal networks are important in dealing with social issues affecting mothers in labour as well as midwives who cannot access supervisors. Networks facilitate access and acceptability of new information by midwives in different social networks (McLeroy et al., 1988:354). From the ecological model of health promotion point of view, interpersonal approaches among midwives need to be designed to change the nature of social existing relationships. By using the EMHP, the study could determine how the midwives' interpersonal characteristics were contributory factors to high mortality rates in selected public hospitals.

2.5.3 Organisational or institutional factors

Organisational factors form the third level of the EMHP and need consideration also. Many studies, similar to this, sought to find out how organisational characteristics were used to support midwives' behavioural change in selected hospitals, the importance of organisational change as a target for health promotion activities and the importance of organisational context in the diffusion of health promotion programmes (McLeroy et al., 1988:354). Hospitals are social institutions with organisational characteristics, both formal and informal rules that govern operations to be done.

In the context of health promotion activities and programmes, public hospitals provide many chances to gain access to workers and patients. With respect to midwives, the pace of work, excessive workloads and responsibilities, job complexity, shift work, and monotony results to

stress at work, poor relationships with supervisors as well as communications predicaments in public hospitals. Public hospitals as organisations have positive and negative effects on the way employees conduct themselves. On the positive side, organisations provide chances for their workers to build social support for behavioural changes, especially when new behaviour is a group norm. Under normal circumstances, hospitals should be characterised by the use of incentives, management, supervisor and peer support, changes in rules and regulations as well as benefits. Health promotion programmes by public health organisations should focus on improving the midwives' skills and knowledge in dealing with maternity complications so that mothers successfully give birth to live children. In this study, the researcher also sought to ascertain organisational factors that contributed to high mortality rates in selected hospitals.

2.5.4 Community factors

In this study community assumes the three meanings attached to the term by McLeroy et al. (1988:363). According to McLeroy et al. (1988:363), community refers to mediating structures or face-to-face primary groups to which individuals belong where families, personal friendship networks and neighbourhood is very important. Another sense attached to community is that of the relationships among organisations and groups within a defined area, such as governmental health providers and voluntary groups. The third connotation of community is a population associated with a given political body and is defined by the existence of power structures. Reflecting on these meanings of community one would realise that different development and implementation of health promotion strategies varied among public health institutions as per demand required of their services by local communities.

2.5.5 Public policy

Public health organisations and bodies use regulatory policies, procedures and laws to protect the health of the communities and societies in which they operate. Research shows that implementation of regulatory policies by health institutions always have a positive effect on the health of the population being served and usually lead to the development of better approaches to deal with new problems (Golden & Earp, 2012:368). Health promotion professionals play an important role in policy development, policy advocacy and analysis. These policy activities are meant to increase public awareness on certain health issues by educating the public policy development process (Eddy, Donahue, Webster & Bjornstad, 2002:198). Midwives in public hospitals are expected to implement policies and protocols when providing service to women in labour, how midwives are not part of the policy making organs. Policies and protocols are always found in each maternity ward, and are readily

accessible by midwives. Poor implementation of policies and protocols leads to poor services to mothers in labour and hence increases the chances of severe fatalities to new born babies.

2.6 SUMMARY

In this section, studies were reviewed pertaining to factors contributing to perinatal morbidity and mortality and approaches to reduce mortality in different developed countries, and in developing countries such as South Africa. The next chapter discusses the research methodology.

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter reviewed literature related to perinatal mortality and factors contributing to its increase. This chapter presents the research design and methods, the research design, study area, population, sample and sampling procedures, the research instrument, data collection and analysis procedures employed for this study. Validity and reliability of the instruments was discussed. Ethical issues were also outlined. The study adopted a quantitative research approach. Data was collected using a self-developed questionnaire designed to address the variables of interest.

Pedhauzer and Schmelkin (1991:23) stated that there is a relationship between theoretical framework and quantitative research design because the selection of research design is always dependent on the objectives or research questions to be addressed. Creswell (2009:71) asserts that quantitative research designs make use of deductive reasoning which require the researcher to start by identifying and describing the theoretical framework that forms the structure and also guides the research study. The fact that the theoretical framework is presented in the early stages of many quantitative studies' proposal is to justify the need to conduct the study (Kitchel & Ball, 2014:186). Consequently, if the research questions dictate research design and methodology, then it implies that research methodologies, instruments and data collection methods are also linked to the theoretical framework adopted. In this study, the EMHP was used as the theoretical framework upon which literature was reviewed, hence the questionnaire was designed based much on the theoretical framework. The main variables determining the contributory factors to high perinatal mortality rate in the selected public hospitals were customised from the theoretical framework.

3.2 STUDY SETTING

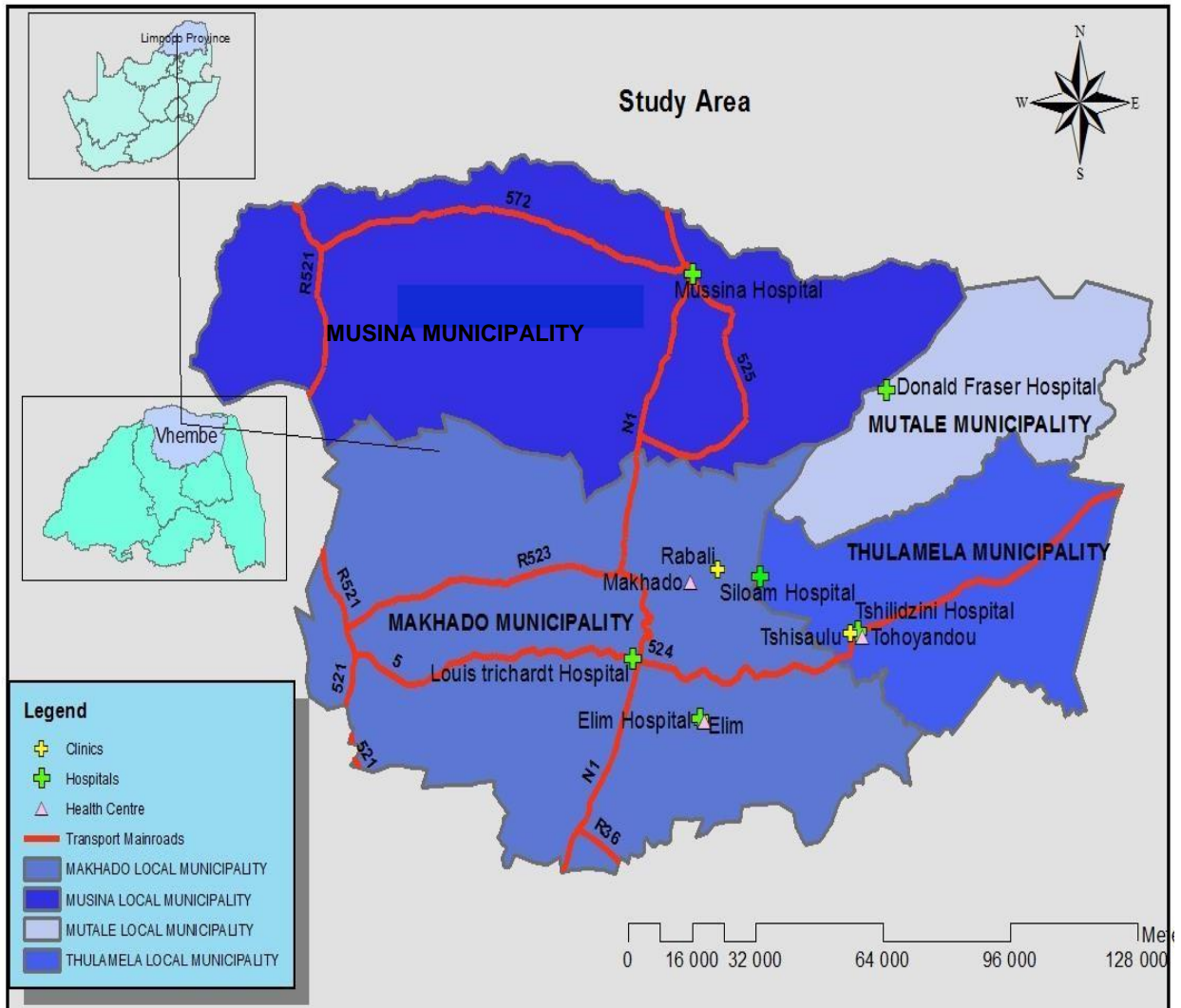


Figure 3.1: Vhembe district municipality, health services map 2013/2014

Vhembe is one of the five districts of Limpopo province of South Africa and covers an area of 25,597.42 km². It is the northernmost district of the country and shares its northern border with Zimbabwe. Vhembe consists of all territories that were part of the former Venda Bantustan. It also includes two large densely populated districts of the former Tsonga homeland of Gazankulu, namely Hlanganani and Malamulele, hence the ethnic diversity of the district (Stats SA, 2011).

Vhembe district has a total population of 1 302 113 with 53.3% females and 46.7% males. The age group 10-19 years is significantly higher than all other age groups placing emphasis on the need for health services for the youth (Stats SA, 2011). Vhembe district is largely rural and the households are mostly headed by females. Males migrate to the urban areas to find work. The area is faced with infrastructural backlogs for water, sanitation and electricity which impact negatively on the health of these communities. The poor road infrastructure influences reasonable response times for vehicles such as ambulances, mobile clinics and police vehicles.

The study was conducted in Vhembe district due to its trends of serving a large number of deliveries which are estimated to ± 400 per month (see Table 3.1).

Table 3.1: Health Facilities in Vhembe District

Hospitals	District/Regional Hospitals	No of deliveries per month
Donald Fraser Hospital	Community Hospital	448
Elim Hospital	Community Hospital	347
Louis Trichardt Memorial Hospital	Community Hospital	167
Malamulele Hospital	Community Hospital	388
Musina Hospital	Community Hospital	126
Siloam Hospital	Community Hospital	303
Tshilidzini Hospital	Regional Hospital	475
Total		2254

(Department of Health, Vhembe district, 2016/2017)

3.3 RESEARCH DESIGN

Pandey and Pandey (2015:18) define a research design as the framework or plan used to guide data collection and analysis. According to Bhattacharjee (2012:35), a research design in empirical studies needs to specify at least three processes namely: the data collection process, the instrument development process, and the sampling process. Shabalala (2016:50) goes on to state further that through a research design, the researcher has the ability to decide which methodology to use for the study and this aids the researcher in using available resources efficiently. For the sake of this study, the researcher used the research design to seek answers to the research questions.

The researcher used a quantitative, descriptive, cross-sectional and exploratory design in order to assess the factors contributing to high perinatal mortality rates in selected public hospitals in the Vhembe district of Limpopo province, South Africa.

3.3.1 Quantitative approach

Quantitative research is a process which consists of stating in advance the research questions or hypothesis, operationalising the concepts and devising or selecting in advance the methods of data collection and analysis, finally presenting the findings in numerical and or statistical language (Ndlovu, 2011:67). In quantitative research, options are usually predetermined and a large number of respondents are involved (Habib, Pathik & Maryam, 2014:8). The goal of quantitative methods is to determine whether the predictive generalizations of a theory hold true (Habib *et al.*, 2014:8). In quantitative research the data is collected by the use of predetermined, structured and standardised methods, such as structured questionnaires, structured observations, structured interviews and measuring tools. The numerical information that is gathered using these formal instruments is then analysed with statistical procedures (Ndlovu, 2011:67).

A quantitative approach was adopted to collect and analyse data using SPSS version 23.0 for the study. The approach was deemed relevant for the study because concepts had been given operational meanings and a questionnaire was developed to measure and assess the knowledge of midwives regarding care of women in labour; attitudes of midwives towards the women in labour; evaluate the implementation of guidelines/protocols to manage complications; and assess the workload and staffing in the relevant wards. Findings were presented in numerical and statistical form.

3.3.2 Descriptive design

A study can be classified as a descriptive study if it tries to describe a situation, phenomenon, problem, and service in a systematic manner (Kumar, 2014:30). Descriptive studies also provide information about the living conditions of a community, or describe attitudes towards an issue. The main purpose of such studies is to describe what is prevalent with respect to the issue/problem under study (Kumar, 2014:30).

According to Walliman (2011:8), descriptive studies rely on observation as a means of collecting data and attempts to examine situations in order to establish the norm. This type of research is directed at making careful observations and detailed documentation of a phenomenon of interest. These observations must be based on the scientific method (i.e., must be replicable, precise, etc.), and therefore, are more reliable than casual observations by untrained people (Bhattacharjee, 2012:6).

Habib *et al.*, (2014:8) stipulate that descriptive research can be used to describe a unit of analysis, e.g., a case study of a particular organisation, or to describe a research method. In that case, descriptive research would be an application of the exploratory research based on the organisation phenomena or event. Descriptive research goes further in examining a problem than exploratory research, as it is undertaken to ascertain and describe the characteristics of the pertinent issues (Habib *et al.*, 2014:8).

The current study was an exploratory, descriptive cross-sectional study. The study design employed a quantitative approach through the use of questionnaires (Cheptum, 2012:20). This study adopted a descriptive approach because it assessed factors contributing to high perinatal mortality rates in selected public hospitals in the Vhembe district of Limpopo province since more information is needed to explain the contributing factors leading to perinatal deaths in the selected hospitals. The findings will assist in improving health care practices if they are lacking, in the prevention of perinatal deaths.

3.3.3 Cross-Sectional design

The cross-sectional design implicates obtaining data from a cross-section of the entire population at a point of time and once from a specific sample. In cross-sectional studies, independent and dependent variables are measured at the same point in time, for example using a single questionnaire (Elliott, Brewster, Thomson, Malcolm & Rasmunssen, 2015:656;

Bhattacharjee, 2012:39). Cross-sectional studies are best suited for studies aimed at finding out the prevalence of a phenomenon, situation, problem, attitude or issue, by taking a cross-section of the population. They are useful in obtaining an overall ‘picture’ as it stands at the time of the study. They are ‘designed to study some phenomenon by taking a cross-section of it at one time’ (Elliott et *al.*, 2015:656; Kumar, 2014:106). Such studies are cross-sectional with regard to both the study population and the time of investigation (Elliott et *al.*, 2015:656; Kumar, 2014:106).

In this study the researcher used a cross-sectional design to obtain data assessing factors contributing to high perinatal mortality rates in selected public hospitals in the Vhembe district at that given point in time.

3.3.4 Exploratory design

According to Habib et *al.* (2014:7), exploratory research is the initial research conducted to clarify and define the nature of a problem. Normally such a study does not provide conclusive evidence as the problem is unknown and subsequent research is expected. As Creswell & Poth (2017:235); and Bhattacharjee (2012:6) state it, exploratory studies are often conducted in new areas of inquiry, where the goals of the research are: to scope out the magnitude or extent of a particular phenomenon, problem, or behaviour; to generate some initial ideas about that phenomenon; or to test the feasibility of undertaking a more extensive study regarding that phenomenon.

Exploratory or empirical research is undertaken to explore new ideas and concepts according to the conceptual models, hypothesis, and empirical evidence. The primary point of exploratory research is to give researchers pertinent information and help them to form initial hypotheses about the subject (Habib et *al.*, 2014:8). In this research, an exploratory design was used to assess the factors contributing to high perinatal mortality rates in selected public hospitals in Vhembe district of Limpopo province as little has been done to assess factors contributing to perinatal mortality in the selected hospitals in Vhembe District. Findings will help to assess current practices and come up with recommendations to help improve labour and maternity care practices.

3.4 RESEARCH METHODS

3.4.1 Population

According to Shabalala (2016:50) the population of a study is defined as the total collection of elements about which the researchers wish to make some inferences. On the other hand, Bhattacharjee (2012:65) define a population as all people or items (unit of analysis) with the characteristics that one wishes to study.

One type of population distinguished by academic researchers is called the target population. Target population refers to all the members of a real or hypothetical set of people, events or objects to which we wish to generalize the results of our research (Pandey & Pandey, 2015: 41).

All the midwives and Accoucheur working in the Antenatal unit, Labour Unit Postnatal unit and Neonatal unit of the three selected hospitals comprised the population for the study. The target population for the study comprised of all registered midwives who had at least two years working experience and who were willing to participate in the study, allocated either in Antenatal unit, Labour Unit Postnatal unit and Neonatal unit of the selected hospitals.

3.4.2 Sampling

Sampling means selecting a given number of subjects from a defined population as representative of that population (Pandey & Pandey, 2015:41). According to Bhattacharjee (2012:65) sampling is the statistical process of selecting a subset (called a “sample”) of a population of interest for purposes of making observations and statistical inferences about that population. Social science research is generally about inferring patterns of behaviours within specific populations based on a sample as it is difficult to involve every individual in the study. By studying the characteristics of the sample, one can make certain inferences about characteristics of the population from which it is drawn (Pandey & Pandey, 2015:41). When sampling, the assumption is that every unit being studied carries the traits of the population from which it is drawn so much so that decisive conclusions can be made from the sample.

There are two types of sampling: non-probability and probability sampling (Franklin & Walker, 2010:87). Non-probability sampling is the sampling technique in which some units

of the population have zero chance of selection or where the probability of selection cannot be accurately determined (Bhattacharjee, 2012:69). Non-probability sampling uses a subjective method of selecting units from a population and provides a fast, easy and inexpensive way of selecting a sample (Franklin & Walker, 2010:87). In non-probability sampling, units are typically selected based on certain non-random criteria, such as quota or convenience in non-probability sampling. On the other hand, probability sampling is a technique in which every unit in the population has a chance (non-zero probability) of being selected in the sample, and this chance can be accurately determined (Bhattacharjee, 2012:67).

According to Shabalala (2016:53), non-probability sampling can either be convenience sampling where the researcher acquires respondents wherever he or she can find them, or quota sampling where the sample is for example the population, but is selected because it is convenient to select it. This suggests that the researcher decides which group of people should be considered for sampling purposes based on convenience (Shabalala, 2016:53). The purposive sampling, a type of non-probability sampling method is selected by some arbitrary method because it is known to be representative of the total population or it is known that it will produce well matched groups (Pandey & Pandey, 2015:43). The idea is to pick out the sample in relation to criterion which is considered important for the particular study.

Non-probability sampling is where the elements were selected by non-random methods, meaning that there was no way of estimating the probability that each element had of being included in the sample that was used in this study. Elements had different chances of being included in a sample. Purposive sampling uses the judgement of an expert or researcher in selecting cases or it selects cases with a specific purpose in mind. In purposive sampling a sample is selected on the basis of knowledge of a population, its elements, and the purpose of the study (Pandey & Pandey, 2015: 43). An analysis of the costs, time and the number of people required for the project were the determinants of the sample size.

3.4.2.1 Sampling strategy

A purposive sampling strategy was employed to select the hospitals based on the knowledge of the researcher of the three hospitals used in this study in terms of the maternity facilities and the professional nurses, particularly the midwives. By using the purposive sampling techniques, the researcher was able to select the sample of hospitals entirely based on own judgement that the hospitals were sufficiently fertile grounds for the type of research being conducted. Also that they were likely to provide population of midwives to be studied and

were representative of the most characteristics and attributes of the population of midwives in the Vhembe District (Pandey & Pandey, 2015:41). Subsection 3.4.2.2 describes the sampling of hospitals and subsection 3.4.2.3 elaborates the sampling process for the midwives done in this study.

3.4.2.2 Sampling of hospitals

Extreme or deviant case sampling, which is a type of purposeful or criterion-based sampling, was used to select the hospitals that took part in the study. Extreme or deviant case sampling considers highly unusual manifestations of the phenomenon of interest (Seawright, 2016:494), in this case unusual high number of PMR. Using this strategy the hospitals in the Vhembe District that were deemed to glean the most information, given the research question were selected (Seawright, 2016:494). The researcher selected three hospitals because of their high number of perinatal deaths in Vhembe District of Limpopo province for the purpose of this study. In this research purposive sampling was conducted according to inclusion and exclusion criteria as described.

Inclusion criteria and exclusion

According to McElroy and Ladner (2013:131-139), the use of inclusion and exclusion criteria is a common practice that researchers use in order to select a sample for any type of study although it is usually associated with qualitative research study. For that reason, this study was justified to utilise inclusion and exclusion criteria to justify why some hospitals were used and others were left out. Data on the number of midwives in labour wards and those in other maternity wards were collated from existing hospital records together with number of deliveries from different hospitals, and sorted as in Table 3.2. Based on the data on Table 3.2, the first three hospitals with highest numbers of midwives and deliveries per month were then included in the study. Those with less numbers were excluded. The researcher had judged that the three hospitals with the highest figures were likely to meet the requirements of the study and they had sufficient nurses, wards and conditions to provide data to answer the research questions without resorting to second collection of data.

Table 3.2: Total number of midwives working in the maternity sections of the three hospitals

Name of the hospital	No. of midwives in labour unit	No. of midwives from other maternity units	Total No. of midwives	No. of deliveries per month	Comment
Hospital A	29	36	65	475	Included
Hospital B	11	21	32	448	Included
Hospital C	25	22	47	388	Included
Hospital D	8	15	23	347	Excluded
Hospital F	8	16	24	303	Excluded
Hospital E	8	12	20	167	Excluded
Hospital G	7	13	20	126	Excluded
Total	96	135	231	2254	

3.4.2.3 Sampling process for the midwives

Once the hospitals were sampled, the researcher was expected to select a sample of respondents from which data were to be collected. Convenience sampling was utilised to select the research sample. Convenience sampling is a non-probability or non-random sampling in which the members of the target population that meet certain practical criteria such as easy accessibility, geographical proximity, availability at a given time and/or the willingness to participate are included for the purpose of the study (Etikan, Musa & Alkassim, 2016:3). The main purpose of using convenience sampling in this study was to collect data from respondents who were easily accessible to the researcher, particularly the midwives usually located in maternity wards as recommended by (Etikan et al., 2016:3). According to Sedgwick (2013:2), the use of convenient sampling is as valid as the use of any other type of sampling technique, however, researchers are accountable for the selection and utilisation of the technique. In this study, midwives on duty were easily accessible to the researcher and were also willing to complete the questionnaires, therefore, the recruitment of the respondents was easy for the researcher, even though they were from different hospitals.

The sample required for the study consisted of trained midwives who were familiar and had experience of dealing with women in labour, giving analgesics and implementation of guidelines, since these form a key part of their training and practice for nursing women in labour.

Using an alpha value of 0.05 and an accepted margin of error of 0.05; given the population of midwives is 144 (including 65 in labour wards and 79 in maternity wards); the minimum sample size that was required in the study, using Cochran's formula, was 105. The target sample size was thus determined to be 105. Since labour ward midwives have experience of dealing with women in labour, giving analgesics and implementation of guidelines more than other midwives, all 65 midwives were included in the sample. The balance of the required sample was then made up from the midwives from the maternity section selected, randomly sampling them (considering the inclusion and exclusion criteria). The requirement was 18 from Hospital A, 11 from Hospital B, and 11 from Hospital C (Table 3.3).

Table 3.3: Sample size for midwives

	Population	Maternity unit	Sample needed	Labour unit	Sample needed	Total sample
Hospital A	65	36	18	29	29	47
Hospital B	32	21	11	11	11	22
Hospital C	47	22	11	25	25	36
Total	144	79	40	65	65	105

However, during data collection the researcher distributed 110 question increase response rate and representativeness, the researcher decided to increase the sample size by 5 more respondents as encouraged by Sarndal, Swensson and Wretman (2003:9). Therefore, Hospital A was to provide 49 respondents, Hospital B 23 respondents and Hospital C 38 respondents.

3.4.2.4 Inclusion Criteria for respondents

A sampling frame or inclusion criteria is defined by Ndlovu (2011:72) as the potential participants who meet the definition of the population and are accessible to the researcher. Inclusion criteria are characteristics that the prospective subjects must have if they are to be included in the study, while exclusion criteria are those characteristics that disqualify prospective subjects from inclusion in the study (Ndlovu, 2011:72).

The inclusion criteria for the respondents were:

- All midwives working in either the Labour Unit or Neonatal unit of the sampled hospitals in the Vhembe district, Limpopo province, South Africa;

- Registered midwives employed by the Department of Health, Limpopo province working in the jurisdiction of Vhembe district hospitals;
- At least two years of working experience as midwives allocated at labour wards or maternity wards; and
- Midwives who were willing to participate in the study and to sign an informed consent form.

3.4.2.5 Exclusion Criteria

The exclusion criteria referred to:

- Registered midwives with less than two years of working experience in either the Labour Unit or Neonatal unit of the Vhembe district, Limpopo province, South Africa;
- Midwives who displayed unwillingness to participate in the study; and
- Midwives who had mental illness.

3.5 DATA COLLECTION

Data collection is the process of gathering the required information for each selected unit in the survey. During data collection, members of the population are located and contacted and their participation in the survey is sought (Franklin & Walker, 2010:37). The actual steps of collecting the data are specific to each study and are dependent on the research design and measurement methods. Data may be collected by observing, testing, measuring, questioning or recording, or any combination of these methods, and the researcher is actively involved in this process either by collecting data or supervising data collectors. In this study data was collected using self-administered questionnaires to meet the objectives of the study.

3.5.1 Data collection tool

A questionnaire is a written list of questions, the answers to which are recorded by respondents. In a questionnaire respondents read the questions, interpret what is expected and then write down the answers (Kumar, 2014:138). Normally a questionnaire (or form) is a group or sequence of questions designed to obtain information on a subject from a respondent (Franklin & Walker, 2010:55). Questionnaires are normally used when one cannot personally see all the people from whom responses are needed or where there is no particular reason to see them personally (Pandey & Pandey, 2015:58).

A self-administered questionnaire was used to collect data in this study. According to Mnisi (2015:55) a questionnaire as a data collecting instrument refers to different situations, such as when the questionnaire is completed by an interviewer in a direct person to person situation, and when the questionnaires are mailed or handed to people for completion without the assistance of the researcher. The questionnaire as data collection instrument is less time consuming, and it can reach a large number of people (Mnisi, 2015:55).

For this study a self-administered questionnaire was used to collect data and it comprised of both closed-ended and open-ended questions which were designed to extract relevant views from the research participants. The questionnaire was completed by the participants. The questionnaire was used to collect data and comprised of the following sections:

- **Section 1:** attempted to obtain the geographical information about the respondents;
- **Section 2:** assessed knowledge of midwives regarding care of women in labour;
- **Section 3:** assessed attitudes of midwives towards the women in labour;
- **Section 4:** evaluated the implementation of guidelines/protocols to manage complication;
- **Section 5:** focused on the staffing and workload.

The questionnaires were formulated in English since the respondents were professional midwives who understood the language. The open-ended questions allowed the respondents to give their own responses. The questions were aimed to allow the participants to freely express their views, attitudes, feelings, beliefs and aspirations uninterrupted as they were expected to individually complete them during their own time. The closed-ended questions allowed the respondents to choose responses from the given list.

3.5.1.1 Questionnaire development and pre-testing

A questionnaire is a data collection instrument comprising a series of questions and other prompts for the purpose of gathering data from respondents (Abawi, 2013: 3). In this study, questionnaire design was derived from research questions and objectives which consisted of three stages namely, formulating questions from research questions and layout, testing the questionnaire to eliminate errors and improve consistency and piloting the questionnaire. This was in line with Neuman (1997: 43)'s suggestion that questions in the questionnaire should be derived from the research questions and objectives. De Vos et al. (2011:171) state that newly constructed questionnaires in their semi-final form should be thoroughly pilot-tested before being utilised in the main investigation. This ensures that errors are rectified immediately at little cost. It is during this phase that any required pre-tests or pilot surveys are carried out to assess, for example, the adequacy of the questionnaire, suitability of the

survey frame, operational procedures, et cetera (Franklin & Walker, 2010:7). Such pretesting may uncover ambiguity, lack of clarity, or biases in question wording, which should be eliminated before administering to the intended sample (Bhattacharjee, 2012:78). A pre-test study was carried out at one hospital in the Vhembe district. The selected hospital was an equivalent of all the hospitals that were selected in the study. The questionnaire was tested on 10 registered midwives with different work experience from the selected hospital, who were not part of the actual study. The pilot study helped the researcher make some improvements on the questionnaire before the main study.

3.5.1.2 Data collection process

Permission to collect data was sought from the University of Venda Higher Degrees Committee, Limpopo Department of Health, and hospital management. The researcher set appointments with the participants before distributing the questionnaires.

Prior to the collection of data, the researcher contacted the hospital through the phone to make an appointment with the hospital management. Upon visiting each hospital, the researcher introduced herself to the management, produced letters of permission to conduct the research from various departments, explained the purpose of the research and then asked for a range of dates on which to collect data. Two days before data collection, the researcher confirmed with the management to come and conduct data collection. On the day of data collection, researcher purposively selected respondents on duty, requested them to participate in the research, explained the purpose of the study, then issued the informed consent form for the respondents to sign.

Data was collected a period of three months (from May 2017 to July 2017) from 110 respondents in the three selected hospitals. The questionnaires were hand distributed to the selected respondents by the researcher at the hospitals. Questionnaires were then administered to respondents who completed the informed consent. The instructions were outlined in the questionnaires and these were meant to inform the professional nurses on how to complete the questionnaires. The respondents completed the questionnaires in their private rooms in their own time and it took approximately 30-45 minutes for each participant to complete the questionnaire. The researcher made appointments with the respondents in their own convenient time as they are shift workers, to come and collect the questionnaires and also check on their completeness.

3.6 ETHICAL CONSIDERATIONS

Ethics is defined by Bhattacharjee (2012:137) as conformances to the standards of conduct of a given profession or group. Such standards are often defined at a disciplinary level through a professional code of conduct, and sometimes enforced by university committees called even Institutional Review Board (Bhattacharjee, 2012:137). In this study, ethical considerations in the conduct of research were adhered to, to prevent ethical controversies. To ensure the ethical conduct of the study, ethical clearance was sought from the University of Venda higher degree committee (UHDC), clearance no SHS/16/PDC/36/0602. Permission to conduct the study was also sought from the Limpopo province Department of Health Ethics Committee. After obtaining permission from the Higher Degrees Committee of the University of Venda and the Limpopo province Department of Health Ethics Committee, the researcher had meetings with key people in the three hospitals including the Hospital Managers, Ward Managers and the sisters in charge of the relevant institutions. Furthermore, the following ethical principles were adhered to:

3.6.1 Informed Consent

The principles of voluntary participation, informed consent, minimisation of harm, confidentiality and anonymity were strictly upheld in this study. A respondent voluntarily agrees to participate in a study in which he or she has full understanding of the study before the study begins (Brink, et al., 2013:58).

Participants in the study were made aware that their participation was voluntary, and that they had the freedom to withdraw from the study at any time without any unfavourable consequences. Also that they were not to be harmed as a result of their participation or nonparticipation in the project according to Bhattacharjee (2012:137). No one was coerced to participate and the decision was solely the participants. Furthermore, all participants received and signed an Informed Consent form that clearly described their right to or not to participate and the right to withdraw, before their responses in the study were sought. This form also specified any possible risks to subjects from their participation (Bhattacharjee, 2012:138).

3.6.2 Autonomy

Autonomy emphasises the right of an individual to make decisions for him/herself (Verklan & Walden, 2010:24). Autonomy was ensured by explaining to the respondents their right to

decide whether or not to participate in the study without prejudicial treatment. The respondents were informed that they had the right to withdraw from the study at any time, to refuse to give information or to ask for clarity about the purpose of the study. The researcher did not force the participants to participate in the study, given that they participated voluntarily.

3.6.3 Confidentiality

According to Ndlovu (2011:81) confidentiality refers to the right of an individual to control personal information or secrets that are disclosed to others. It demands nondisclosure of private or secret information about another person with which one is entrusted. To protect subjects' interests and future well-being, their identity must be protected in a scientific study. This is done using the dual principles of anonymity and confidentiality. Anonymity implies that the researcher or readers of the final research report or paper cannot identify a given response with a specific respondent (Bhattacharjee, 2012:138).

Each signed consent form was sealed in an envelope and placed into a sealed container. Each anonymously completed questionnaire schedule was placed into another sealed container. This way no one could link any completed questionnaire schedule to any specific respondents or to any specific signed consent form. The researcher kept the signed consent forms and completed interview schedules locked up in a safe place to ensure confidentiality. Only the researcher, the study supervisors and a statistician had access to the completed interview schedules and to the data entered into the SPSS programme which were only accessed by means of secure passwords known only to the researcher, supervisors and statistician. The completed questionnaires were kept until the research report was accepted by the authorities concerned.

3.6.4 Anonymity

Anonymity means that no one, including the researcher, should be able to identify any respondents afterwards (De Vos et al., 2011:55). The principle of anonymity, which essentially means that the respondents remain anonymous throughout the study, should always be adhered to by researchers. Respondents were assured anonymity as no names and no numbers or any identifying indications were recorded on any form.

3.6.5 Beneficence

According to Ndlovu (2011:80), beneficence encompasses the maxim: “Above all, do no harm”. The participants could not be harmed physically, psychologically, economically and socially. Participants should not be put at a disadvantage or exposed to situations for which they have not been prepared. The risk of harm was minimal because the study was non-invasive, involving only filling the questionnaire by the respondents. However, the researcher was available at each site during the data collection and attended to any respondent who experienced psychological stress as a result of taking part in the study.

3.7 DATA ANALYSIS

Data analysis embraces a whole range of activities of both the qualitative and quantitative type. It is usual tendency in behavioural research that much use of quantitative analysis is made and statistical methods and techniques are employed (Pandey & Pandey, 2015:70). Data capturing was managed by Microsoft Excel 2013, which made it possible to be transferred into SPSS (Statistical Package for Social Sciences). Analysis was undertaken with the Statistical Package for Social Sciences (SPSS 23.0). This allowed for uni- and bivariate analyses. Univariate analysis, or analysis of a single variable, refers to a set of statistical techniques that can describe the general properties of one variable. Univariate statistics include: frequency distribution, central tendency, and dispersion (Bhattacharjee, 2012:121). Bivariate analysis examines how two variables are related to each other (Bhattacharjee, 2012:121).

In order to describe the factors contributing to high perinatal mortality rates in the Vhembe district, frequency tables were generated (univariate analysis). Frequency distributions describe the number of times the different attributes of a variable are observed in a sample. This allowed for the comparison of different variables. As to the bivariate analyses, statistical tests of significance were conducted to examine whether variables relate in order to explore independent variables (e.g. knowledge regarding care of women in labour; midwives’ attitude towards women in labour; implementation of guidelines/protocols; staffing and workload) differences. Chi-square test was used to calculate significant differences in the variables among the three hospitals. A 95% level of significance was used, which is most commonly used in social research.

Chi-square statistics and odds ratio was used to test hypothesis. Significance level was $p < 0.05$ at 95% CI. To examine individual effects of various explanatory variables on pregnancy outcome, logistic regression analysis was performed separately for each explanatory variable (Univariate model) and thereafter all the variables. The results of each of the three objectives are presented under the following headings: socio-demographic characteristics of the population, pre-existing conditions and obstetric emergencies associated with poor pregnancy outcome and health facility factors associated with poor pregnancy outcomes. Responses from open-ended questions were coded and categorised based on keywords or the meaning they implied, how positive the respondent was towards the issue being addressed. It was easy to answers such as agreeing, strongly agreeing, not sure, disagreeing, strongly disagree, sufficient, not sufficient. These criteria were used to convert the responses to Likert type responses and assigning a numerical score 5 to 1 (very positive to very negative). The data was then treated quantitatively to generate statistical results similar to other variables.

3.8 RELIABILITY AND VALIDITY

Reliability is the degree to which the measure of a construct is consistent or dependable (Bhattacharjee, 2012:56). Reliability refers to consistency throughout a series of measurements (Pandey & Pandey, 2015:21). Any measuring device or instrument is said to be valid when it measures what it is expected to measure (Pandey & Pandey, 2015:21). In the following section, the validity and reliability of this research are discussed.

Internal validity, also called causality, examines whether the observed change in a dependent variable is indeed caused by a corresponding change in hypothesized independent variable, and not by variables extraneous to the research context (Bhattacharjee, 2012:35).

Content validity is an assessment of how well a set of scale items matches with the relevant content domain of the construct that it is trying to measure (Bhattacharjee, 2012:56). Content validity addresses how well the items developed to operationalize a construct, provide an adequate and representative sample of all the items that might measure the construct of interest. It is important that the items and questions cover the full range of the issue or attitude being measured. Assessment of the items of an instrument in this respect is called content validity. In addition, the coverage of the issue or attitude should be balanced; that is, each aspect should have similar and adequate representation in the questions or items. Content validity is also judged on the basis of the extent to which statements or questions

represent the issue they are supposed to measure, as judged by you as a researcher, your readership and experts in the field (Kumar, 2014:167).

Because there is no statistical test to determine whether a measure adequately covers a content area or adequately represents a construct, content validity usually depends on the judgment of experts in the field (Kimberlin & Winterstein, 2008:2277). Content validity was enhanced by obtaining inputs from the study's supervisor, and from four senior midwives working in the Labour Unit and Neonatal unit services from other hospitals. The items of the questionnaire were derived from the literature review and from the researcher's experiences of providing midwifery services in the Vhembe district.

At least five experts in midwifery were consulted and the instrument was only used after agreement with these experts that every item in the questionnaire was relevant for the purpose of the study (face validity) and was relevant for obtaining biographic information about the participants or about their perceptions on the factors contributing to high perinatal mortality rates in the study area (content-related validity). Content validity was further explored by comparing findings obtained in response to different items and no major discrepancies were found.

External validity or generalizability refers to whether the observed associations can be generalized from the sample to the population (population validity), or to other people, organisations, contexts, or time (ecological validity) (Bhattacharjee, 2012:36). External validity refers to "the extent to which study findings can be generalised beyond the sample used in the study". The results of this study might not be generalizable to health facilities beyond the non-representative sample without performing similar studies at other study sites. This was in line with Bhattacharjee (2012:37) who stated that the best research designs are those that can assure high levels of internal and external validity and that such designs would guard against spurious correlations, inspire greater faith in the hypotheses testing, and ensure that the results drawn from a small sample are generalizable to the population at large.

Reliability refers to the stability or consistency of the measurement. If the same variable is measured under the same conditions, a reliable measurement procedure produces identical measurements and a measuring instrument is able to yield consistent numerical results each

time it is applied (De Vos et al., 2011:162). Burns and Grove (2011:374) point out that reliability is concerned with the consistency of the measurement technique.

To ensure reliability, a pre-test was conducted by administering the questionnaire to 10 respondents, who were excluded from the actual study. The researcher conducted a pre-test survey. At a subsequent meeting of these 10 persons, their responses were discussed and compared, and no marked differences were identified. No items were found to be problematic in the instrument during the pretesting phase.

3.9 SUMMARY

This chapter described the research design and methods that were used to collect data. Data was collected in person and ethics were considered and adhered to accordingly as stated in the chapter. Solicited data was meant to meet the aim of the study which sought to investigate factors contributing to high perinatal mortality in selected public hospitals in Vhembe district of Limpopo province, South Africa.

DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

The previous chapters presented literature relevant to factors contributing to high perinatal mortality rates, theoretical framework of the ecology model of health, study design and methodology used in this study. The description analysis revealed that factors contributing to high perinatal mortality rates and theoretical framework of the ecology model of health promotion share a number of connections. It is noticeable from the findings of the descriptive analysis as provided in previous chapters that the application of the ecology model of health promotion is of importance to assess factors contributing to high perinatal mortality rates. It is vital to state that South Africa is one of the countries with decreasing rates of infant mortality, although it is encouraging, South Africa still has a high mortality rate compared to other developing countries with low income category.

This chapter discusses the analysis, interpretation and discussion of the findings from respondents who participated on this study. Data was collected from 110 respondents in the three selected public hospitals in Vhembe district, however, the statistical information was derived from a sample of 105 respondents who completed questionnaires. Refer to 4.2 for detailed information. The percentages were calculated on the number of responses to each item. This was done using SPSS version 23.0 computer programme with the help of a Statistician from the university of Venda Department of Statistic. Geographical information of the respondents was obtained to evaluate gender dominance though it has no significance importance of the study since it is not focus of the study.

The purpose of the study was to assess factors contributing to high perinatal mortality rates in the selected public hospitals of Vhembe district of Limpopo province, South Africa. The aim of this chapter was to analyse, interpret and describe the data collected. A total number of 105 midwives and Accoucheurs were selected purposively to obtain data.

The study was guided by the following objectives:

- Determine the knowledge of midwives regarding the care of women in labour in the selected public hospitals of Vhembe district in Limpopo province, South Africa..
- Assess the attitudes of midwives towards women in labour.
- Identify the availability and use of guidelines/protocols by midwives to manage complications during labour.
- Examine staffing and working factors that contributed to high perinatal mortality rates in the selected public hospitals.

Discussion of findings was based on the main items as appeared on the questionnaire. Response from open-ended questions was grouped and analysed quantitatively, closed-ended analysed using frequency, percentages and cross tabulation. Data collected were presented with the aid of figures, percentage, pie charts, bar graphs and tables. The questionnaire included the following five sections:

Section 1

This section comprised items on geographical information of respondents.

Section 2

This section comprised items on knowledge of midwives regarding the care of a woman intrapartum.

Section 3

This section comprised items regarding the attitude of midwives in terms of caring for a woman in labour.

Section 4

This section comprised items on guidelines/protocol used by midwives when managing the complications intrapartum.

Section 5

This section comprised items on staffing and workload.

4.2 ANALYSIS, INTERPRETATION AND DISCUSSION OF FINDINGS

Data was collected from 110 respondents in the three selected public hospitals in Vhembe district, one regional hospital and two district hospitals using a questionnaire administered by the researcher. Upon receiving each questionnaire, the researcher checked whether all questions were completed. Three respondents withdrew after answering Section I and citing pressure to attend to personal problems and the questionnaire was rejected. Another questionnaire was defaced by an opaque liquid spilt on it and was difficult to decode. Another questionnaire was rejected as it was missing a page. In all, 105 questionnaires were validated and accepted as below.

4.2.1 Distribution of respondents by Hospitals

The study was conducted in three hospitals and the distribution of respondents as per hospital are shown on figure 4.1.

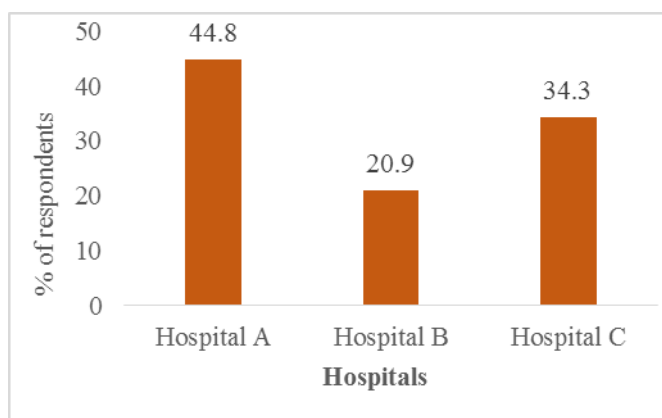


Figure 4.1: Distribution of respondents by Hospitals

Figure 4.1 shows the distribution of respondents according to the participated hospitals. Almost 47 (44.8%) of the respondents were from hospital A, while minority 22 (20.9%) of the respondents were located at hospital B and 36 (34.3%) of the respondents were in hospital C. The majority of the respondents 79.1% were from Hospitals A and C. The characteristics of the sample are described in the next section under Biographic Information.

4.3. SECTION 1: BIOGRAPHIC INFORMATION OF RESPONDENTS

4.3.1. Demographic profile of respondents

This section presents, analyses and interprets the various demographic characteristics of the respondents from which data for this study was collected. Supporting frequency tables and graphs are provided.

4.3.1.1 Distribution of respondents by gender

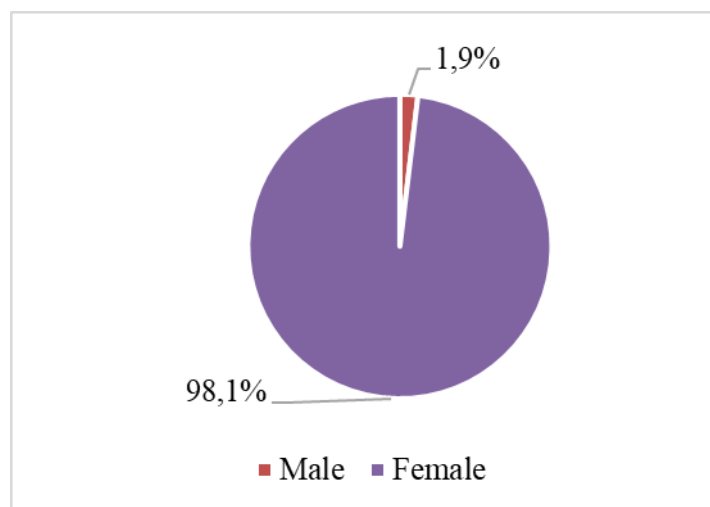


Figure 4.2: Distribution of respondents by gender

Figure 4.2 depicts that of the 105 respondents who participated in this study, the majority 103 (98.1%) were females only minority 2 (1.9%) were males, confirming that the nursing profession was still female dominated and that male midwives preferred to work in any other units than the maternity units. This finding is confirmed by The Telegraph (Wednesday 03 January 2018), a United Kingdom national newspaper, that men have been allowed to work as midwives for three decades in UK, but only around 103 compared to 31189 females do so and many expectant mothers remain unsure about having one for their birth. In a report in The Telegraph (2018), expecting mothers are reported to prefer female midwives to male as they thought that the former gave more care to the mother and the baby than the latter. This confirms that midwifery might remain a gender discriminating component of nursing globally.

4.3.1.2 Distribution of respondents by age group

The age group distribution of the respondents who participated in the study is depicted in Figure 4.3. The sample was composed of only midwives in the target hospitals who were 20 years and older.

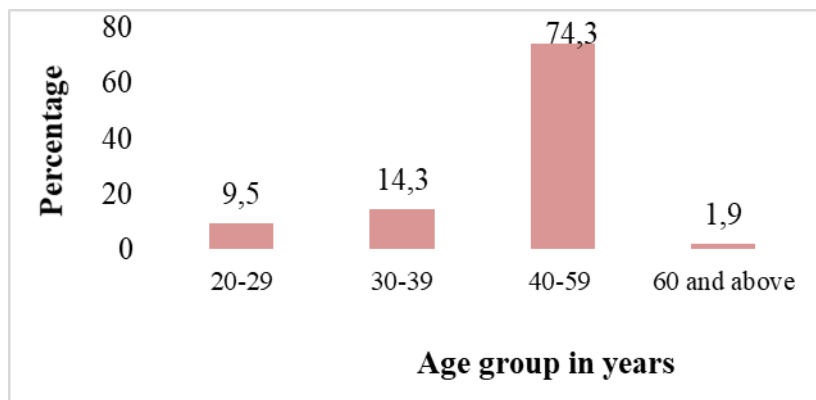


Figure 4.3: Distribution of respondents by age group

Figure 4.3 shows that the majority, 76 (74.3%) of the respondents were in the age group 40-59 years consisting of professionals and more matured respondents, while almost 10 (9.5%) of the respondents were aged 20 to 29 years old and 15 (14.3%) of the respondents were aged 30 to 39 years, the minority 2 (1.9%) of the respondents were above 59 years. As reported in Kang, Wei and Cole's (2013:12) study on "*Using Social Ecological Factors to Measure the Social Benefits of Leisure Activity on Senior Adults' Quality of Life (QOL): A Validation in 2013 National Senior Games*", age is one of the most important demographic characteristics, intrapersonal in understanding respondents' views, beliefs and attitudes about the research problems because age indicated how matured one was. As one's age increases so does experience and understanding of real life problems and the ability to solve the problem. The passion to solve a real life problem affecting other people also increases with age. Pitter's (2016:10) study on midwives' characteristics on gender-based violence conducted in Jamaica, established that elderly people regardless of their educational qualifications understand the world far better than younger people. The results also highlight the efforts by very young respondents in shouldering the responsibility of the midwives.

4.3.1.3 Distribution of respondents by nursing qualifications

There are different types of nursing qualifications that individuals who undergo nursing training can acquire in SA training institutions. A nursing qualification was an important aspect of demographic information that was investigated by this study.

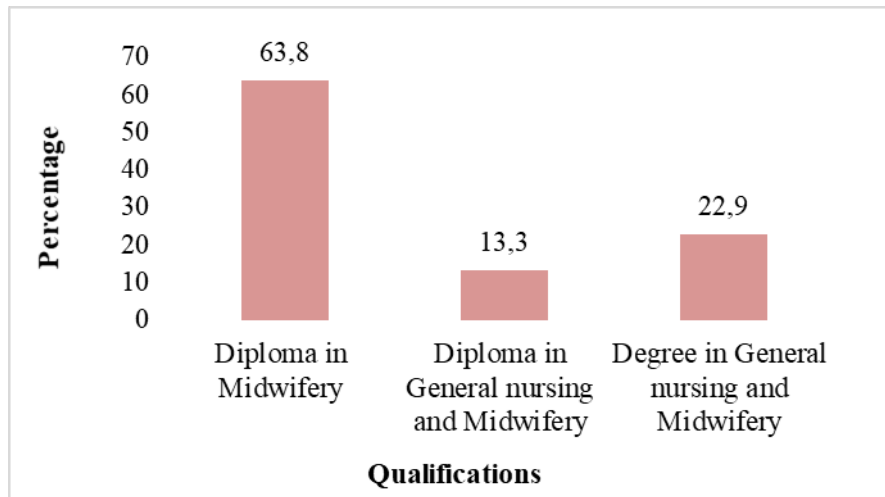


Figure 4.4: Distribution of respondents by nursing qualifications

Figure 4.4 depicts results of respondents' nursing qualifications. The results show that majority 67 (63.8%) of the respondents had qualified as midwives at a diploma level in midwifery, while a minority of almost 14 (13.3%) of the respondents held a Diploma in (General nursing, Community, Psychiatry) and Midwifery. Other qualifications shown were the Degree in (General nursing, Community, Psychiatry, and Midwifery) held by only 24 (22.9%) of the respondents. In this study, nursing qualifications were regarded as having an influence on understanding of rules and protocols because more educated nurses found it easy to understand information. Secondly, professional qualifications in midwifery units were regarded as the most important indicator for best practice and also most vital in the reduction of incidences that always take place in maternity wards and that lead to many infancy deaths. Respondents of this study were mainly midwives and Accoucheur with a Diploma in Midwifery.

4.3.1.4 Specialty qualifications of respondents

A specialty qualifications was considered as one of the most important characteristics likely to affect the person's attitude and the way a midwife applies her practice in midwifery and understanding any particular social phenomena. The response of an individual was likely to

be determined by his/her additional qualifications' status and therefore it became imperative to know the specialty qualifications of the respondents, particularly the specialty.

Table 4.1: Specialty qualification of respondents

Specialty qualification	Frequency	Percent
Advanced Midwifery and Neonatal Nursing Science	18	17,1
Diploma in Neonatal Intensive Care Nursing	1	1,0
Degree in Neonatal Intensive Care Nursing	2	1,9
None	84	80,0
Total	105	100,0

Table 4.1 shows distribution of the respondents according to the specialty/additional qualifications of the respondents. Amongst all the respondents of this study 105 (100.0) only 18 (17.1%) of the respondents were found to have a Diploma in Advanced Midwifery and Neonatology, 1 (1%) of the respondents had a Diploma in Neonatal Intensive Care Nursing, 2 (1.9%) of the respondents obtained a degree in Neonatal Intensive Care Nursing and the majority, 84 (80.0%) of the respondents had no specialty. A study conducted in Iran by Afhami, Bahadoran, Taleghani and Nekuei (2016:179) confirms that midwives with higher qualifications can provide better quality work than their counterparts as they are more knowledgeable in the area in which they specialised. Respondents' additional specialty was included in this study and viewed as an important item since perinatal mortality is problematic in this country as well as elsewhere in the world and requires highly qualified personnel.

4.3.1.5 Respondents' years of work experiences

In this study, it was imperative for the researcher to have an insight into the work experience or duration of time that each respondent had spent as a midwife. The results for this variable are shown on Figure 4.5.

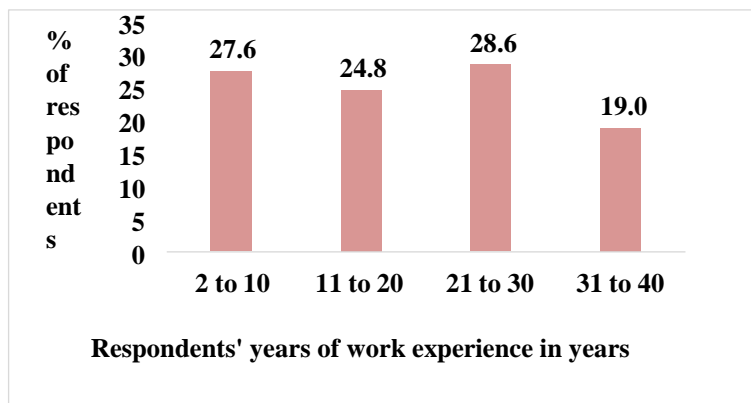


Figure 4.5: Respondents' years of work experiences

Figure 4.5 shows the experiences of the respondent as midwives. The results show a fair distribution experience with 29 (27.6%) of the respondents with experience of about 2-10 years, 26 (24.8%) of the respondents had experience 11-20 years, majority 30 (28.6%) of the respondents had 21-30 years of work experience and 20 (19.0%) of the respondents had 31-40 years' experience being the least. The findings of this study are similar to the study done by Berhe, Tinsae and Gebreegziabher's (2017:223) study in Ethiopia, on caring for neonates which report similar findings in which professional nurses, 26 (25%) were allocated and remained in the maternity unit for more than 10 years. This is a good practice because it allows the professionals to develop much more caring experience. Respondents are evenly distributed among the various nursing experiences. The sample was composed of a mixture of less experienced (27.6%) and highly experienced respondents (72.4%). This implies that most of the responses used in this study were from highly experienced midwives. A study on growing up and Role Modeling conducted in Iran by Nouri, Ebadi, Alhani and Rejeh (2014: 273-283) encourages researchers to establish the experience of respondents in the subject being studied.

4.3.1.6 Respondents unit allocated

It was important for this study to find out the units to which each of the respondents was allocated, see Figure 4.5.

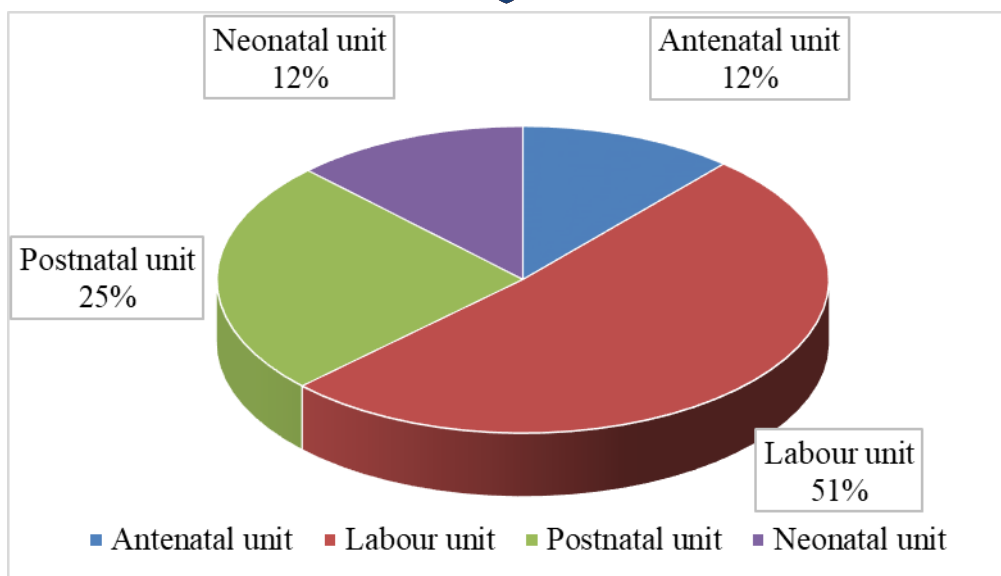


Figure 4.6: Respondents unit allocated

Figure 4.6 indicated the unit allocation of the respondents. The results show that a small majority, 54 (51.4%) of the respondents were allocated to the labour unit, about 26 (24.8%) of the respondents were allocated to the postnatal unit while 13 (12.4%) of the respondents worked in the neonatal unit; and the minority 12 (11.4%) of the respondents were working in the antenatal unit. Unit allocation was important in this study because each respondent had a preferred unit where he/she was comfortable to perform duties effectively. A study conducted by Walker, Lannen and Rossie (2014:201) in rural Kentucky, USA on “Midwifery Practice and Education: Current Challenges and Opportunities” confirms that respondents give information to their best ability if questioned about the place they enjoy working in.

4.3.1.7 Bed allocation in the unit

Each maternity unit was expected to have a certain number of beds allocated to it for use by expecting mothers. Data on this variable was collected, processed and presented on Table 4.2.

Table 4.2 Bed allocation in the unit

Bed allocation	f	%
8 to 10	49	46,7
11 to 13	16	15,2
14 to 16	10	9,5
17 to 19	6	5,7
20 and above	24	22,9
Total	105	100,0

Table 4.2 shows how beds were allocated per unit. The results show that 49 (46.7%) of the respondents have 8-10 bed allocation; it reveals that a majority of the units have lowest bed allocation. The results also indicate that 16 (15.2%) of the respondents worked in units with bed allocation of 11-13, 10 (9.5%) of the respondents worked in units allocated 14-16 beds, 6 (5.7%) of the respondents were stationed in units with bed allocation of 17-19 while 24 (22.9%) of the respondents received more bed allocation. Analysis of the bed allocation was shown to know how the patients are being allocated their bed when in a hospital. Council for scientific and industrial research (CSIR) and Department of Health (2014:33) confirms the findings by saying that standard bed allocation per ward in South Africa should be 28-32 beds where the postnatal and antenatal wards remain separated without sharing services with the delivery unit, which will have its own service support and staff areas. This made it imperative for this study to establish bed allocation. As the results show, about 50% of the respondents were working in units with a very high shortage of beds leading to expecting mothers not being accommodated in the maternity wards where they could receive services from midwives.

4.4. SECTION 2: KNOWLEDGE OF MIDWIVES REGARDING THE CARE OF WOMAN INTRAPARTUM

This section presents, analyses, interprets and discusses results on the knowledge of midwives pertaining to the care of woman intrapartum. The results are presented on a composite table. For the purpose of this study, the distributions of the frequency are denoted by symbol f , percentage by % and total number of respondents by n throughout

Table 4.3: Knowledge of midwives regarding the care of woman Intrapartum

Theme	YES		NO		Total	
	f	%	F	%	Fn	%
2.1 Respondents trained on essential steps in managing obstetric emergencies (ESMOE).	57	54.3	48	45.7	105	100
2.2 Respondents trained on Helping Babies Breath skills.	73	69.5	32	30.5	105	100
2.3 Respondents trained on LINC (Limpopo Initiative for New-born Care).	17	16.2	88	83.8	105	100
2.4 Respondents exposed to BANC workshops.	17	16.2	88	83.8	105	100
2.5 Respondents felt that there is adequate awareness regarding the above trained skills.	42	40.0	63	60.0	105	100
2.6 Respondents having relevant knowledge, skills and experience to be successful in providing quality patient care.	73	69.5	32	30.5	105	100
2.7 Respondents willing to implement the above trained skills.	85	81.0	20	19	105	100
2.8 Respondents felt that there is adequate awareness regarding Emergency Obstetric Simulation Training (EOST).	40	38.1	65	61.9	105	100
2.9 Respondents felt that there is adequate awareness regarding Helping Babies Breath (HBB).	41	39.0	64	61.0	105	100

4.4.1 Respondents trained on essential steps in managing obstetric emergencies (ESMOE)

Knowledge in managing obstetric emergencies is vital among midwives hence the need to ask this question. Results on Table 4.3 indicates that the majority 57 (54.3%) of the respondents affirmed that they had been trained on essential steps in managing obstetric emergencies while minority 48 (45.7%) of the respondents indicated that they had not been trained. The study established that most of the maternity units were attended to by midwives who did not train on ESMOE. This study found that lack of knowledge of ESMOE is a contributory factor to perinatal mortality. It could be deduced from the results that a considerable number of midwives have no knowledge on ESMOE because they have not trained in ESMOE. Naidoo's (2016:2071) research evaluated ESMOE among a number of nurses in KwaZulu-Natal's (KZN) major hospitals and established that more than 50% of the workshop attendees were not trained in this essential skill. To confirm the finding of this study, Ameh and den Broek's (2015:1079) study in Sub-Saharan countries, emphasises that obstetric complications require prompt action by skilled healthcare providers/birth attendants because any delay can lead to loss of life and/or poor maternal health outcomes.

4.4.2 Respondents trained on Helping Babies Breathing skills

The Helping Babies Breathe (HBB) programme is a safe birth initiative strengthening training programme to help babies breathe at birth and is expected to save the lives of thousands of babies (Van Heerden, 2015). The results on Table 4.3 show that the majority 73 (69.5%) of the respondents indicated that they were trained on helping babies' breathing skills while the minority 32 (30.5%) of the respondents indicated that they were not trained. The study has established that although the majority of the respondents indicated that they were trained in helping babies breathing skills, a considerable percentage (30.5%) of the respondents were not trained. In this regard, it can be deduced that some of the midwives in charge of the maternity wards did not have knowledge and skills in assisting babies to breathe. This study has established that lack of training in HBB among midwives was a contributory factor to a high perinatal mortality rate in selected hospitals. A study in Nagpur and Belgaum, India, Eldoret and Kenya, on "Helping Babies Breathe (HBB) training" by (Bang, Patel, Bellad, Gisore, Goudar, Esamai, Liechty, Meleth, Goco, Niermeyer, Keenan, Kamath-Rayne, Little, Clarke, Flanagan, Bucher, Jain, Mujawar, Jain, Rukunga, Mahantshetti, Dhaded, Bhandankar, McClure, Carlo, Wright & Hibberd, 2015:212) confirms

that lack of HBB knowledge and skills among birth attendants is a major cause of death among newly born babies in developing countries. Ashish, Wrammert, Nelin, Clark, Ewald, Peterson & Malqvist (2017:13) conducted a study in Nepal on HBB that also confirms that it was an easy-to master skill which was also easy to forget after a period of six months. The authors further allege that 5% of 835 midwives could ventilate new-born mannequin correctly before initial training, but 97% succeeded after ventilation training. In this study, 30% was too high a percentage to ignore, therefore, lack of HBB knowledge and skills were contributory factors to high perinatal mortality rate in the selected public hospitals.

4.4.3 Respondents trained Limpopo Initiative for New-born Care

Caring for newly born babies is among the top priority of basic health care and the need to ascertain whether to find out whether the respondents were trained. Based on the results shown on Table 4.3 only minority, 17 (16.2%) of the respondents indicated that they were trained on Limpopo Initiative for New-born care while the majority, 87 (83.8%) of the respondents indicated that they were not trained. These results mean that the majority of the respondents were trained in this vital additional area of primary health. The study has established that the majority 88 (83.8%) of the respondents lacked knowledge in the Limpopo Initiative for New-born Care. The Limpopo Initiative for New-born Care (LINC) is a provincial programme package which was established in 2003 to improve the quality of all aspects of new-born care in all districts and regional hospitals in Limpopo Province (UNICEF 2011:10). LINC is a provincial new-born outreach project being supported by the Limpopo Provincial Department of Health, UNICEF and Save the Children in which (UNICEF, 2011: 5) midwives were expected to receive free training. However, the findings of this study confirm that LINC has not achieved its objectives as there was a large percentage of midwives who have not yet undergone training. Lack of knowledge and skills in HBB was found to be a contributory factor to high perinatal mortality rate in the selected public hospitals.

4.4.4 Respondents exposed on BANC workshops

It is expected that midwives attend BANC workshops in order to align their knowledge and skills with new developments in obstetrics. Therefore, it was necessary to ask this question. Results on Table 4.3 indicate the results of those who have been exposed to BANC workshops and those who have not. Only the minority 17 (16.2%) of the respondents

affirmed that they were exposed to BANC while the majority of the respondents, 88 (83.8%) of the respondents indicated that they had not been exposed to a BANC workshop. It can be deduced that the majority of the respondents involved in this study did not attend BANC workshops and lacked knowledge in new practices. This finding is consistent with findings by Ngxongo, Sibiyi and Gwele's (2016:1016) study in South Africa on *Evidence of application of the Basic Antenatal Care principles of good care and guidelines in pregnant women's antenatal care records* which identify evidence of incomplete application of the BANC principles of good care and guidelines in pregnant women's antenatal care records and indicated that the BANC approach was not being successfully implemented in certain hospitals. In their study Hofmeyr and Mentrop (2015:902) on "*Time for basic antenatal care plus in South Africa,*" similar to Ngxongo, et al, (2016:1017) emphasise that it is a requirement that all midwives and doctors be trained on the use of BANC protocols and this could be attained through workshops. With the majority of the respondents not being exposed to BANC workshops, this becomes a contributory factor to perinatal mortality rate as a result of lack of key skills taught by such workshops.

4.4.5 Awareness regarding the above training skills

Respondents were asked whether they felt that there was adequate awareness or not about a variety of the trained skills. Results shown on Table 4.3 indicate the awareness regarding ESMOE, LINC and BANC. The results show that the minority 42 (40%) respondents indicated that there is adequate awareness about ESMOE, LINC and BANC while the majority 63 (60%) of the respondents indicated that the awareness about ESMOE, LINC and BANC was not sufficient. The results indicate that there was lack of awareness about important training skills among the respondents. This implies that most of the midwives were ignorant of ongoing training about ESMOE, LINC and BANC. Study by Ngxongo et al, (2016:1018) confirm the reluctance of health professionals in embarking on awareness courses

4.4.6 Relevant knowledge, skills and experience to successfully provide quality patient care

Provision of quality patient care is one of the objectives of functionally viable maternity units in public hospitals. To determine whether quality patient care was provided, respondents were asked the question to that effect. Results on Table 4.3 show that the

majority 73 (69.5%) of the respondents affirmed that staff members had the knowledge, skills and experience in providing quality patient care while the minority 32 (30.5%) of the respondents did not think that the staff members had relevant knowledge, skills and experience in providing quality patient care. The results confirm that while some staff members have knowledge about quality patient care, 30.5% lacked that important knowledge. Having relevant knowledge, skills and experience is the most important factor in any profession as it helps in providing quality patient care during antenatal, intrapartum and postpartum care. To confirm the finding of this study, Sengane's (2013:24) study on "*Mothers' expectations of midwives' care during labour in a public hospital in Gauteng*" posits that nursing, midwifery and care staff always work in wider multidisciplinary teams that play important roles providing and maintaining high quality care and excellent outcomes for patients. Cummings' (2013:44) findings on midwives' skills in England also confirms that there were established and evidenced links between patient outcomes and whether organisations have the right people with the right skills and knowledge, in the right place at the right time. In hospitals where 30.5% of midwives lack skills and knowledge to articulate their duties, there is more likely to have related high perinatal mortality rate.

4.4.7 Midwives willing to implement the above training skills

The willingness of respondents to implement skills they have trained into was also vital and results are on Table 4.3. The results show that the majority 85 (81%) of the respondents indicated that midwives were willing to implement the skills training on ESMOE, LINC and BANC. The minority 20 (19.0%) of the respondents indicated that midwives were not willing to implement training skills in order to provide quality patient care during antenatal, intrapartum and postpartum care and prevent complications. These results are not consistent with those in 2.4 where only the minority 17 (16.2%) of the respondents were exposed to BANC, while 88 (83.8%) of the respondents were not exposed. Although most midwives were not exposed to ESMOE, LINC and BANC training, they were willing to implement whatever skills were honed from any training provided. A study on "*Utilisation of the partogram among nurses and midwives in selected health facilities in the Eastern Province of Rwanda*" by Bazirete, Mbombo and Adejumo (2017:1751) also confirms that most of the midwives in public hospitals in South Africa and Rwanda showed willingness to implement new skills acquired in workshops, but this was stifled by the lack of opportunities for such training. This is also confirmed in a study in Kenya by Vinayak, Sande, Nisenbaum and

Nolsoe (2017:2125) which documents the eagerness of midwives to perform a hi-tech obstetric process supported by mobile technology in a rural set-up. Midwives' eagerness is not a contributory factor as most of the midwives were not trained in the skills they were supposed to implement.

4.4.8 Awareness regarding Emergency Obstetric Simulation Training (EOST)

In Table 4.3, the majority of respondents, 65 (61.9%) indicated that there was insufficient awareness regarding EOST while the minority 40 (38.1%) respondents thought that there was adequate awareness. It could be deduced from the results that some respondents lacked an awareness of EOST although they appreciated its importance in assisting midwives in being always fully alert and managing emergency cases, particularly in the absence of a doctor.

Confirming the findings of this study are Daniels, Erickson, Andreatta, Pliego and Goffman's (2012) study on the respondents' "*Simulation-based team training in obstetric emergencies*" who agreed that EOST is always important to develop a number of skills needed in obstetrics. A study by Daniels et al. (2012) reports to the contrary by saying that in many public hospitals which are understaffed, staff members hardly find time to acquaint themselves with these exercises. In this study, regardless of the importance of this exercise, certain midwives remain unaware of the skill and might not be in a position to practice the skill, therefore becoming a contributory factor to a perinatal mortality rate in the selected public hospitals.

4.4.9 Awareness regarding Helping Babies Breath (HBB)

Helping Babies Breath awareness among midwives was an equally important knowledge factor to investigate hence the question above. The results for this question are displayed on Table 4.3 in which the majority 64 (61.0%) of respondents expressed that they did not feel that there was adequate awareness regarding helping babies to breath and the minority 41 (39%) of the respondents thought that there was adequate awareness. The results show that a considerable number of midwives felt that there was insufficient awareness regarding HBB. Ersdal, Singhal, Msemo et al. (2017: e0178073) make the same observance based on their study conducted in India by saying that many infants die in developing countries due to secondary to intrapartum or postpartum complications that can be prevented by midwives' intervention. Ersdal et al.s (2017: e0178073) argument that many midwives are often

ignorant of what should be done to help babies survive through HBB, confirms the finding of this study with regards to lack of knowledge on key aspects of HBB and other new operational practices by midwives in selected hospitals.

4.4.10 Main challenges to prevent drills on the above training skills

Respondents were requested to indicate the main challenges that prevented drills of a set of skills required of midwives. The results were graphically presented in Figure 4.7.

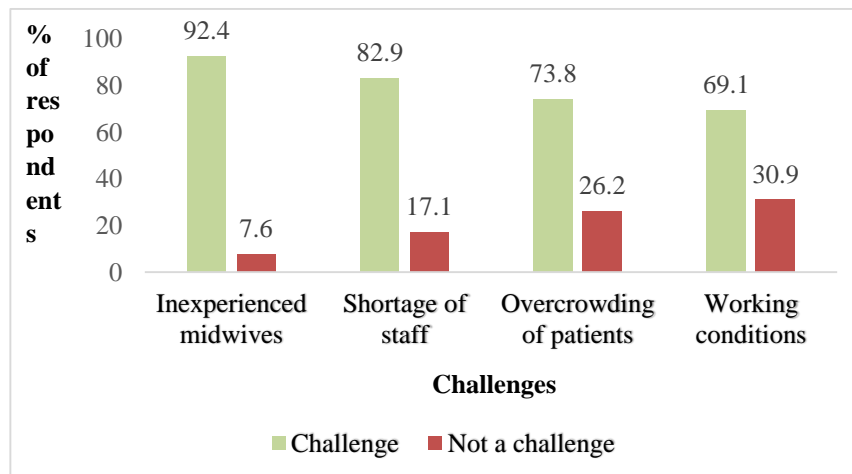


Figure 4.7: Main challenges to prevent drills on above training skills

Figure 4.7 shows that the majority 97 (92.4%) of the respondents were of the view that inexperienced midwives posed as the most critical challenge while the minority 8 (7.6%) of the respondents indicated to the contrary. On staff shortage as a challenge, the majority of the respondents 87 (82.4%) affirmed that indeed staff shortage in selected hospitals was a big challenge and the minority 18 (17.6%) of the respondents were of the opinion that it was not a challenge. With regards to overcrowding, the majority 77 (73.8%) of the respondents expressed that it was also a major challenge while the minority 28 (26.2%) of the respondents thought it was not a major challenge. Similarly, 73 (69.1%) of the respondents indicated that working conditions were one of the challenges that prevented midwives from conducting drills while the minority of the respondents 32 (30,9%) did not regard working conditions as challenges preventing staging of drills. Therefore, more staff need to be recruited in order to overcome the challenges and also improve on the working conditions, for example, lack of resources and not neglecting the inexperienced midwives by offering in-service training to be able to render quality patient care. Van Heerden's (2015) study in

Gauteng (SA) argues that lack of an adequate workforce is an additional challenge to reducing death of neonatal due to asphyxia which always occurs in areas of the world in which there are inadequate numbers of trained professionals. Midwives play a critical part in rendering qualified care, particularly in neonatal resuscitation and therefore their shortage directly affects the quality of services in maternity wards as well as the training programmes put in place (Van Heerden, 2015).

Similarly, a hospital in Honduras is reported to be always faced by the crisis of staff turnover, insufficient and inconsistent staff training (Seto, Tabangin, Josyula, Taylor, Vasquez, Beena and Kamath-Rayne, 2015:225). With high staff turnover, it means that hospitals will have many inexperienced midwives working in maternity wards. This implies that, they have to put on hold some of the key training programmes in order to give the inexperienced staff sufficient time to perfect their skills.

4.4.11 Emergency Obstetric Simulation Training (EOST) frequency

EOST is an important type of training drill that every midwife should undergo in order to understand how to deal with emergency situations. Respondents were asked this question in order to determine their knowledge about the frequency of conducting EOST. The results are shown on Table 4.4.

Table 4.4: EOST frequency

Response	F	%
Always	4	3.8
At least every week	2	1.9
Every week	14	13.3
Once a month	31	29.5
Twice a month	2	1.9
Every three months	37	35.3
Once a year	6	5.7
Twice a year	8	7.6
Three times per year	1	1.0
Total	105	100

Table 4.4 indicates the number of times EOST should be conducted. The results show that 37 (35.3%) respondents thought that EOST should be done every three months, 31 (29.5%)

thought that it should be done monthly, 14 (13.3%) that it should be done weekly, 4 (3.8%) that it should be done always, 2 (1.9%) that it should be done at least every week, 6 (5.7%) that it should be done once in a year, 1 (1.0%) that it should be done three times in a year, 2 (1.9%) that it should be done two times in a month while 8 (7.6%) thought it should be done twice a year. Going by the majority who suggested that EOST should be conducted every three months, it should be a concern to ensure that midwives are well trained from time to time. The results show that the respondents were not certain about the frequency of performing the EOST. The studies of Daniels et al, (2012) and Ersdal et al, (2017: e0178088) propose that EOST be regularly conducted in order to refresh skills and knowledge among already practicing midwives; and also to introduce those who have just joined the profession to a variety of alternative methods. Ameh and den Broek (2015:1080) argue that EOST knowledge and skills can be revived within four weeks after a long period of not being exposed to the simulation. This is also confirmed by Naidoo (2016:15) who performed a study with midwives who had not been using the EOST for a long period of time. Naidoo (2016:15) reports that it took an average of four weeks for midwives to revive fully their knowledge and skills through EOST. In this study, midwives were not sure of the frequency of EOST, implying that they were consistently attending as required.

The findings from the 11 variables investigated in this section confirmed that lack of knowledge was one of the contributing factors towards the perinatal mortality rate in the three selected public hospitals.

4.5. SECTION 3: ATTITUDES OF MIDWIVES CARING FOR A WOMAN IN LABOUR

Midwives are delegated to monitor pregnant women to ensure safe pregnancies and deliveries hence their attitudes and care towards women in labour is of paramount importance (Pitter, 2016:102). This study collected data on attitudes of midwives caring for women in labour.

Results are presented graphically question by question.

4.5.1 Midwives support women in labour

Results of ranking on midwives' support for women in labour are shown on Figure 4.8.

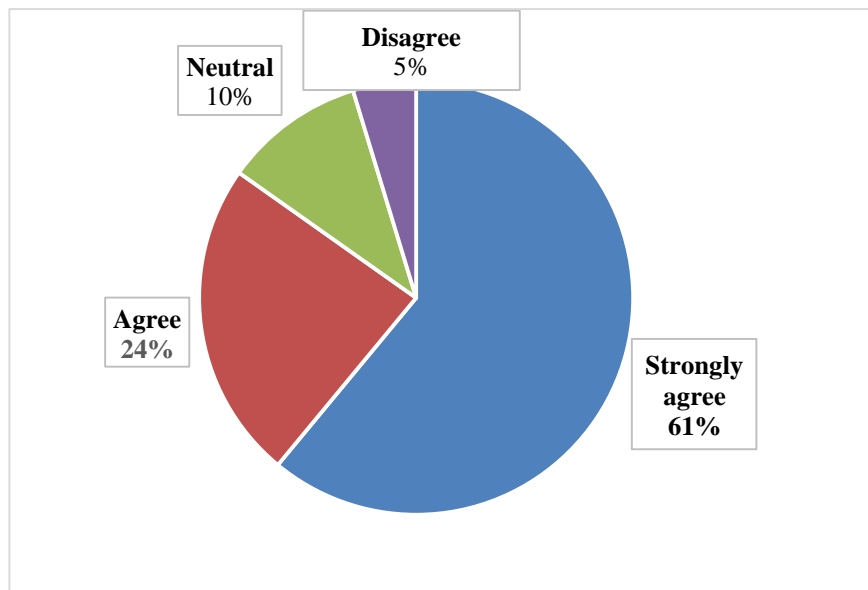


Figure 4.8: Midwives support women in labour

Figure 4.8 indicates how respondents ranked the support midwives rendered to women in labour. The results show that 64 (61.0%) of the respondents strongly agreed, about 25 (23.8%) of the respondents agreed, while 11 (10.5%) of the respondents were neutral and 5 (4.7%) of the respondents disagreed. It could be said that the majority 89 (84.8%) of the respondents positively confirmed that midwives supported women in labour. This confirmed the positive attitude towards women when in labour. The attitudes and behaviours of maternal health care providers are regarded as an important element of quality because they influence both positively and negatively how women, and their partners and families perceive and experience maternal health care (Mannava, Durrant, Fisher, Chersich & Luchterse. 2015:36). Lack of respectful care and support from providers, such as doctors and midwives usually led to dissatisfaction with the health system, diminishing the likelihood of seeking antenatal, delivery and postnatal services (Mannava et al., 2015:38). According to these authors the doctor's and midwife's support during delivery of the baby is important as it encourages the women to give birth naturally. In a survey conducted in Lusaka, Zambia, exploring access to and quality of maternity care, MacKeith, Chinganya, Ahmed & Murray (2003) in Mannava et al. (2015:102) reports that women who had delivered in a health facility praised midwives for support and good personal treatment of maternity patients. This study's findings were similar to that of Goedert, Moeller and White (2012:147) which indicated that midwives were able to provide needed support to expecting mothers and those

giving birth. The findings in this study are supported by the findings of a study by Adeyemo, Oyadiran, Ijedimma, Akinlabi and Adewale (2014:e8937-2) in West Nigeria that established that midwives' attitude and practice elicited positive effect on women in labour, which gave a positive impression on pregnant women's perception. Adeyemo et al. (2014: e8927-4) concluded that supportive relationship and high quality care always empowered the women in labour thus enhancing safe delivery. The implication was that the relationship between the midwife and the woman in labour needs to be cordial and a positive attitude would aid the midwives to perform their roles and responsibilities effectively. In this study, support by midwives was not a factor contributing to perinatal mortality rate as women in labour were reported to be given sufficient support during labour.

4.5.2 Evaluation of midwives on women`s ability to cope with labour

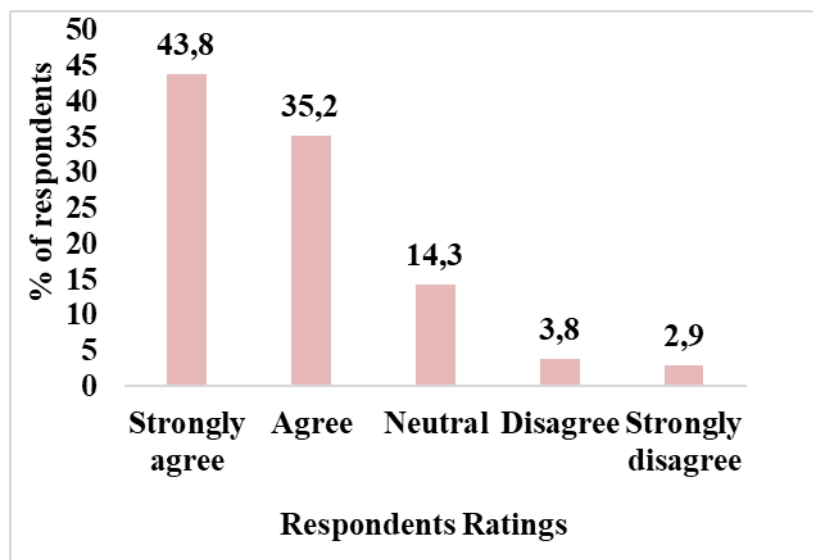


Figure 4.9: Evaluation of midwives on women`s ability to cope with labour

Figure 4.9 shows that the majority 46 (43.8%) of the respondents strongly agreed that midwives were able to evaluate pregnant women's ability to cope with labour, 37 (35.2%) of the respondents agreed that midwives were able to evaluate pregnant women's ability to cope with labour, 15 (14.3%) of the respondents were neutral, the minority 4 (3.8%) of the respondents disagreed, and 3 (2.9%) of the respondents strongly disagreed. The study found that the majority 83 (79%) of the respondents affirmed that midwives were able to evaluate women's ability to cope with labour. It was important for midwives to be able to evaluate the

ability of women to cope with labour in order to prevent maternal exhaustion which would lead to foetal distress, resulting in perinatal death. In case of maternal exhaustion, midwives will act on the pharmacological aspect, for example, sedate the women so they may have a bit of rest. This finding was consistent with the findings made by Beigi, Broumandfar, Bahadoran and Abedi (2011: 77 in their study, "*Women's experience of pain during childbirth*") conducted in Iran, that labour pain is one of the most severe pains which had ever been evaluated and this fear is one of the reasons women would not go for natural delivery. Literature emphasizes that midwives were expected to be equipped to evaluate labour pain. Evaluating how expecting mothers perceive childbirth could have important effects on how they behave and cope with labour and midwives need to have this knowledge. Beigi et al. (2011:79) point that fear of labour pain is one of the most important reasons why women go for caesarean section. Midwives in this study were found to be capable of evaluating whether the expecting mother would be able to cope with labour. Midwives' ability to evaluate women's ability to cope with labour was not a contributing factors as the majority of the midwives were able to perform this duty.

4.5.3 Midwives shifted towards a more pain-relief orientated approach

According to the study by Klomp, de Jonge, Hutton, Hers and Lagro-Janssen (2016:16) conducted in the Netherlands on "*Perceptions of labour pain management of Dutch primary care midwives*", labour pain is considered to be the major concern for pregnant women, their partners and maternity health care professionals.

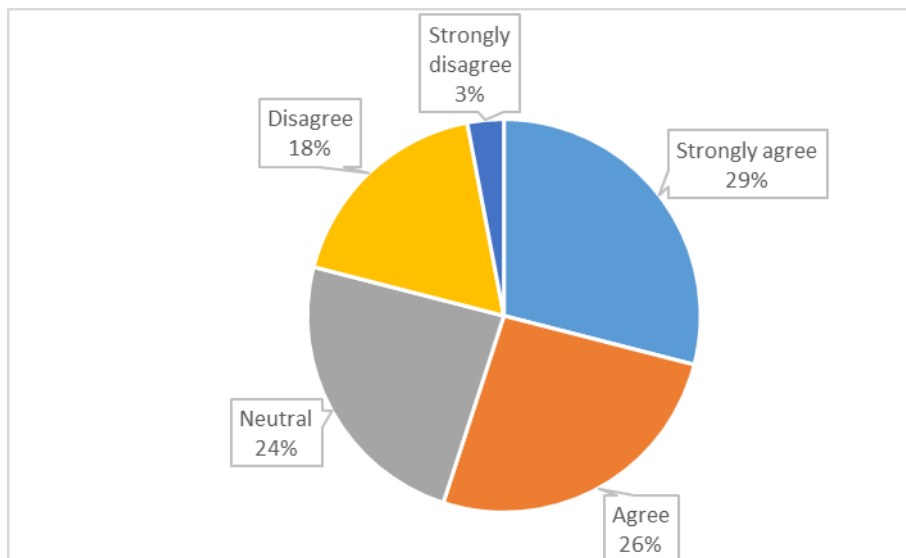


Figure 4.10: Midwives shifted towards a more pain-relief orientated approach

Figure 4.10 shows that 31 (29.5%) of the respondents strongly agreed and 27 (25.7%) agreed to the notion that all the midwives had shifted towards a more pain-relief orientated approach, about 25 (23.8%) were neutral, while 19 (18.1%) disagreed and 3 (2.9%) of the respondents strongly disagreed. Overall, 58 (55.2%) of the respondents agreed with the notion that all midwives had shifted towards a more pain-relief orientated approach, while 22 (21%) disagreed. The study established that some midwives had not shifted towards a more pain relief orientated approach implying that some women were not helped during labour pains, a situation that could lead to birth complications. The finding of this study was consistent with the findings by Klomp et al, (2016:16) that midwives were challenged by the need to balance their professional attitude towards normal birth and labour pain, which favoured working with pain, without the shift in society towards a wider acceptance of pharmacological pain management during labour. In a study on *Technologies of birth and models of midwifery care* conducted in Brazil, McCourt (2014:223) contends that technology and other pain free birth giving methods allow professionals to be more detached from what is happening to the women as they focus more on what is happening to the baby, rather than the mother's body. Busy staff can feel safe and leave a woman in labour alone since she will be on the monitor of technology and pain free process of giving birth. McCourt (2014:225) also purports that with the development of anaesthesia, traditional midwifery skills of psychological support in coping with pain are being lost. In light of this, midwives hold different views on the use of pain-free technology. Nilsson, Thorsell, Wahn

and Ekstrom's (2013:115) study on "Factors Influencing Positive Birth Experiences of First-Time Mother" conducted in Sweden also report that midwives whose approach was to help women work with pain described childbirth as a natural biological process as they believed that it was important that birth hormones be released, and allow women to manage labour pain without the need of pharmacological pain management, including the use of epidural analgesia. Such midwives regarded women's hormones as being essential for labour pain management because they allowed labour pain to be tolerable for women, for mother-child bonding, and for women's self-esteem (Nilsson et al., 2013:118). In this study, some midwives held the view that the use of pain free methods during delivery was the viable method.

4.5.4 Midwives help women manage labour pain without the use of pain medication

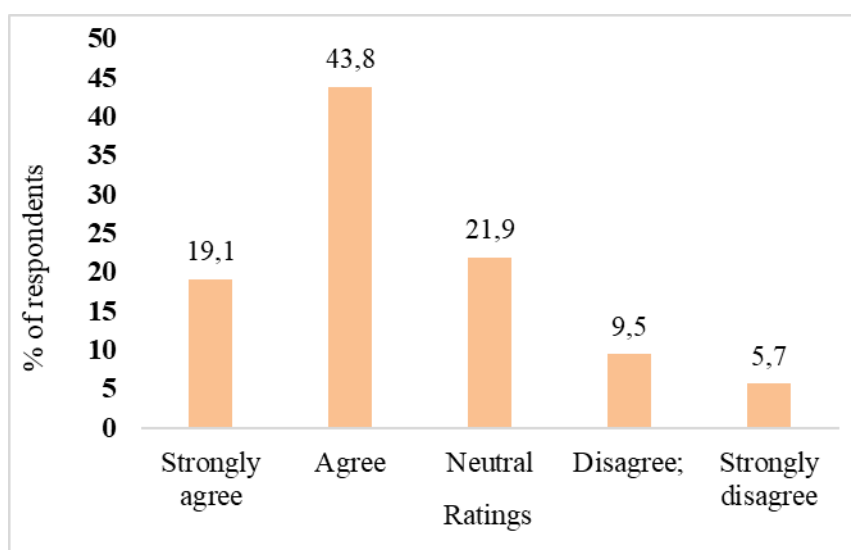


Figure 4.11: Midwives help women manage labour pain without the use of pain medication

The results on Figure 4.11 show that nearly 20 (19.1%) of the respondents strongly agreed that midwives helped women to manage labour pain without the use of pain medication, the majority 46 (43.8%) of the respondents agreed that midwives helped women to manage labour pain without the use of pain medication, while nearly 23 (21.9%) of the respondents were neutral, also 10 (9.5%) disagreed, the minority 6 (5.7%) of the respondents strongly disagreed that midwives helped women to manage labour pain without the use of pain medication. The findings were that although 62% of the respondents agreed that midwives helped expecting mothers to manage labour pains without using pain medication, 31.4% disagreed. This means that, in some maternity wards, expecting mothers were not assisted to overcome pain. Midwives managing women in labour without pain medication is a focus of this study as women may develop pain intolerance and bear down prematurely which could lead to stillbirth (Beigi et al., 2011:79). The finding of this study is consistent with Steel, Adams, Sibbritt, Broom, Gallois and Frawley (2013:23) in their study on "*Managing the pain of labour: factors associated with the use of labour pain management for pregnant Australian women*" conducted in Australia which posits that women who give birth in smaller, non-profit hospitals or in rural services, without an anaesthesiologist on site, are more likely to give birth without the use of epidural anaesthesia. Jeschke, Ostermann, Dippong, Brauer, Pumpe, Meissner and Matthes (2012:342) also argue that women who consult with a midwife, family physician or nurse for prenatal and intrapartum care are more likely to manage labour pain without the use of pain medication. This study was conducted in rural hospitals in which most of the pregnant women would have preferred guidance from midwives on how to manage pain.

4.5.5 Midwives want the women to undergo natural labour without pain-relief medication

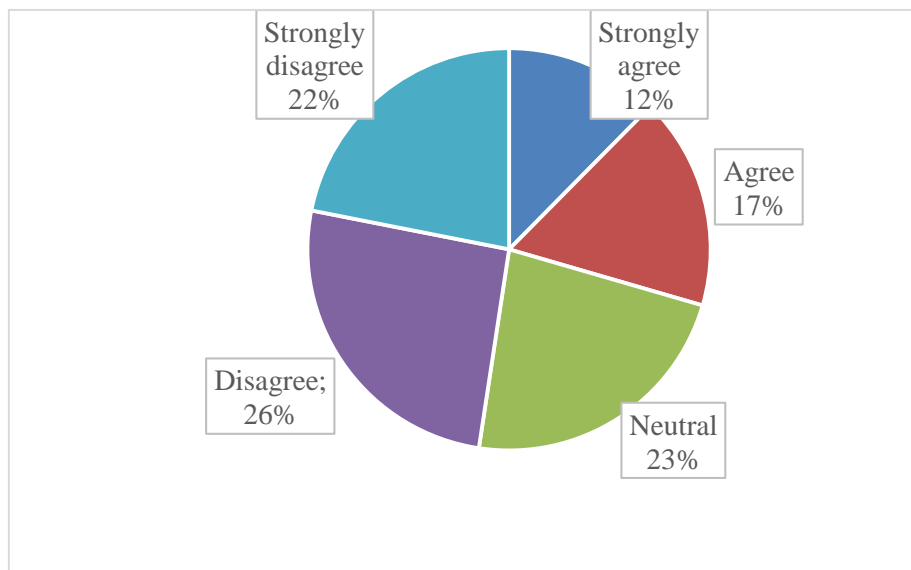


Figure 4.12: Midwives want the women to undergo natural labour without pain-relief medication

Respondents were asked to indicate on a Likert Scale on “Midwives want the women to undergo natural labour without pain-relief medication”. The results on figure 4.12 show that 13 (12.4%) respondents strongly agreed, 18 (17.1%) of the respondents agreed, meanwhile 24 (22.9%) were neutral, 27 (25.7%) disagreed and 23 (21.9%) of the respondents strongly disagreed that midwives wanted expecting women to undergo natural labour without pain relief medication. There were more respondents who disagreed compared to those who agreed. Not all midwives wanted pregnant women to undergo natural labour without pain relief medication. The results are consistent with the findings made by Steel et al ,

(2015:1635) that the decision to use pain management was by the pregnant woman on consultation with midwives. Although midwives would prefer natural labour, however labouring mothers had more say on the type of pain management. However, the background of women involved also played a major part in deciding whether to use pain relief or not. In this study, with the majority of the respondents from rural set-ups, it could have been a common practice that the decision to use pain relief may have rested with family of the pregnant women, with the midwives playing an advisory role.

4.5.6 Midwives encourage and assist the women with breathing and relaxation techniques

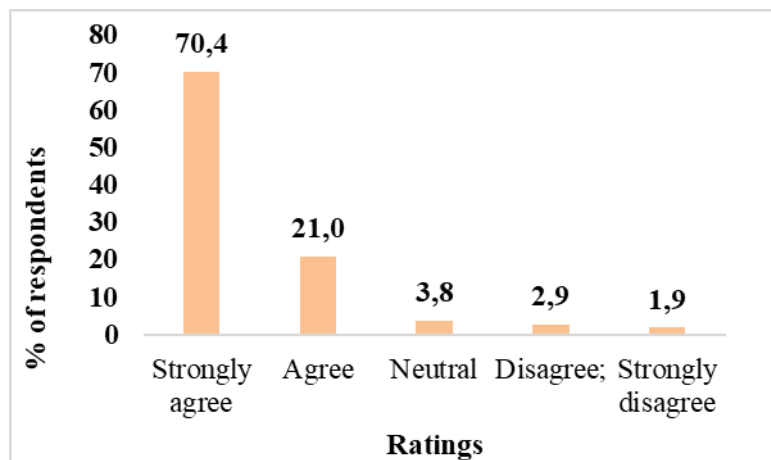


Figure 4.13: Midwives encourage and assist the women with breathing and relaxation techniques

Figure 4.13 shows that the majority 74 (70.4%) of the respondents strongly agreed, while 22 (21%) agreed, 4 (3.8%) were neutral, the minority of the respondents, 3 (2.9%) disagreed and 2 (1.9%) of the respondents strongly disagreed that midwives encouraged and assisted the women with breathing and relaxation techniques. These results show that the majority of the respondents 96 (91.5%) agreed that midwives encouraged and assisted the women with breathing and relaxation techniques. The study found that the midwives encouraged and assisted women in breathing and relaxation techniques in most hospitals. The studies *Midwives' Verbal Support of Nulliparous Women in Second Stage Labour* by Borders, Wendland, Haozous, Leeman and Rogers (2013:311) and *Recommended Relaxation and Breathing Techniques During Labor* by Vakil (2017:7) support the idea that many doctors and midwives believe that controlled breathing and relaxation exercises can help pregnant women to stay calm during labour because the exercises can make the labour process easier by:

- significantly reducing the intensity of labour pains;
- making the labouring women feel more in control of their bodies and are able to experience childbirth more easily; and
- rhythmic breathing exercises that reduce the risk of both assisted and caesarean births in women.

In this study, the midwives played an integral role in encouraging and assisting the women with breathing and relaxation techniques which was crucial during delivery of the baby. The study established that midwives strived to assist women giving birth, a positive attitude towards improving live births in the area.

4.5.7 Midwives provide continuous support to women in labour

It is of importance that midwives show support to women in labour for early detection of problems and treatment thereof. Respondents were asked to indicate their opinion on a Likert scale, results on Figure 4.13.

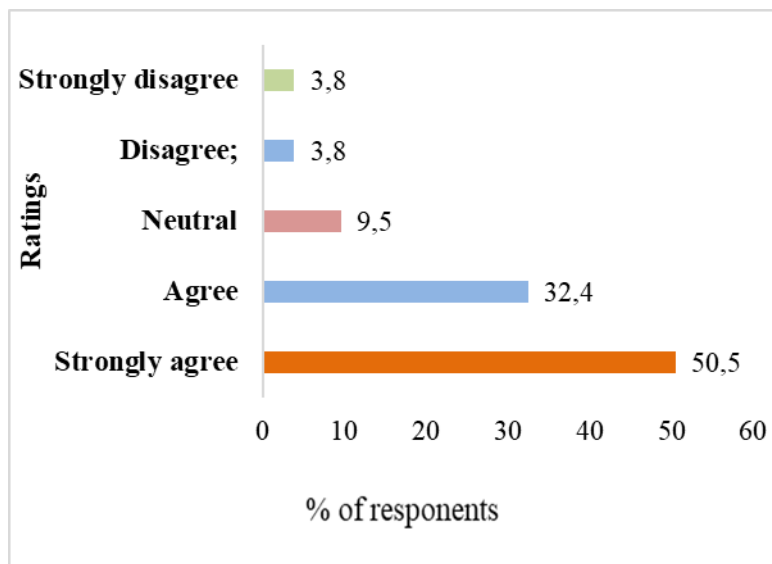


Figure 4.14 Midwives provide continuous support to women in labour

Figure 4.14 shows how respondents expressed their opinions pertaining to midwives' continuous support to women in labour. The results show that the majority 53 (50.5%) of the respondents strongly agreed that midwives provided continuous support to midwives, while 34 (32.4%) agreed, 10 (9.5%) of the respondents were neutral, 4 (3.8%) of the respondents disagreed and the minority 4 (3.8%) of the respondents strongly disagreed that midwives provided continuous support to midwives. Overall, the majority of the respondents 87 (82.9%) indicated that support was provided by midwives while the minority 8 (7.6%) of the respondents disagreed that midwives provided continuous support to midwives. These results indicate that midwives were always there to provide support to women during labour. In the previous statements, it has been proved that midwives played a crucial role in assisting pregnant women during child delivery. Women experience a wide range of pain in labour,

and have an equally wide range of responses to it. Therefore, a pregnant woman's reaction to labour pain is usually influenced by the circumstances of her labour such as environment and the support she receives (Borders, Wendland, Haozous, Leeman. & Rogers, 2013:311). Midwives provide support such as helping the women in their wish to avoid medical pain relief or helping them to choose among different types of medication methods for pain relief. This obliges midwives to be up-to-date with non-medical methods of pain relief including water, positions, movement, massage, coping strategies and alternative therapies (The Royal College of Midwives, 2012). Studies in the developing world suggest that the support offered to a woman by a midwife during labour always has a greater impact than many other variables on the rate of operative deliveries, including maternal age, gestational age, infant weight, antenatal classes and attending physician (The Royal College of Midwives, 2012). The majority of the respondents in this study confirmed that midwives should provide support to women during labour.

4.5.8 Midwives keep women informed about the progress of labour

Keeping a woman in labour informed about the progress of what is happening is expected of midwives attending to the woman. Data on this variable was collected and results shown on Figure 4.14.

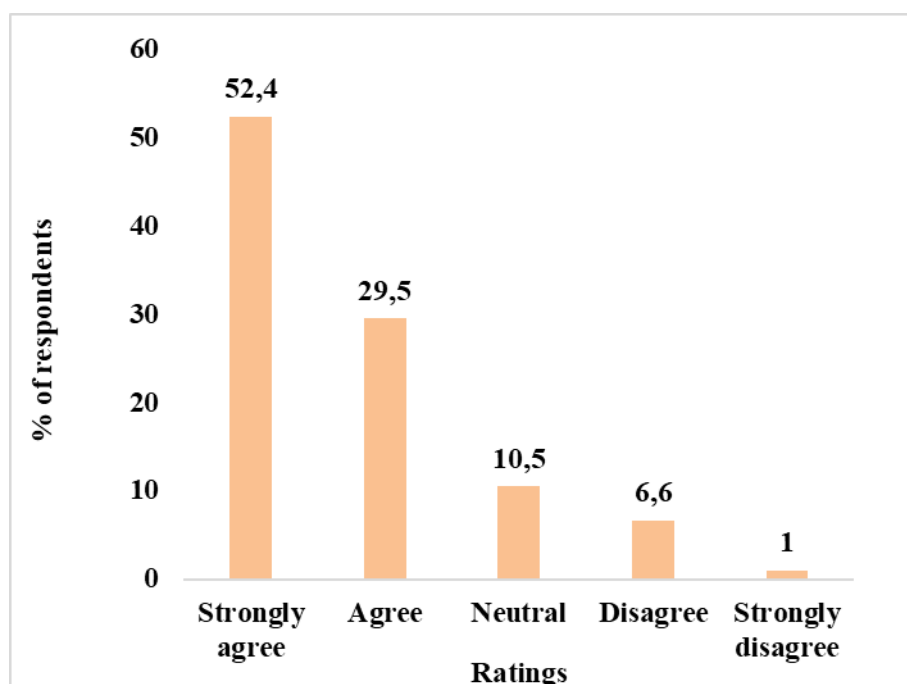


Figure 4.15: Midwives keep women informed about the progress of labour

Results on Table 4.15 show a small majority 55 (52.4%) of the respondents strongly agreed that women in labour were continuously informed about the progress while 31 (29.5%) of the respondents agreed that women in labour were continuously informed about the progress, 11 (10.5%) were neutral, while the minority, 7 (6.6%) disagreed, and 1 (1%) of the respondents strongly disagreed that women in labour were continuously informed about the progress. Overall, 86 (81.9%) of the respondents were positive that midwives communicated with women about the progress of the labour. This implies that on many occasions, mothers in labour were aware of the progress of the delivery situation. This development could only occur if midwives had a positive disposition to what was happening. According to Iravani et al.s (2015:134) study on "*Women's needs and expectations during normal labor and delivery*", women's childbirth experience has four dimensions to the support that women want in labour, namely emotional informational, physical and advocacy. Midwives are expected to have very good active listening skills in order to support women during childbirth. It is important for the midwives to provide women with relevant information throughout the labour period.

This study established that midwives had a positive attitude towards women in labour as confirmed by results in which the majority of the respondents agreed with most of the statements used to determine that variable. The findings were also confirmed by Adeyemo et al. (2014: e8937-7) who found that midwives' attitude towards pregnant women in labour was positive, caring and the skills used for child delivery enhanced positive outcome. According to Adeyemo et al. (2014:10) midwives are the health professionals who play the important role in caring for pregnant mothers in the home, health institutions and community. Therefore the purpose of the maternity care is to allow the midwives to take the crucial role of relieving pain and caring for the midwives. Given the nature of the job midwives perform and whom they have to deal with, it requires them to highly regard their jobs. The findings confirm that midwives' attitudes towards women in labour were not a contributing factor towards perinatal mortality in the selected public hospitals as women in labour were reported to be given adequate support during labour.

4.6. SECTION 4: UTILISATION OF GUIDELINES /PROTOCOLS

The data collected in this section was meant to assess the utilisation of guidelines/protocols in maternity wards in the selected public hospitals.

4.6.1 Availability of guidelines/protocols in the units

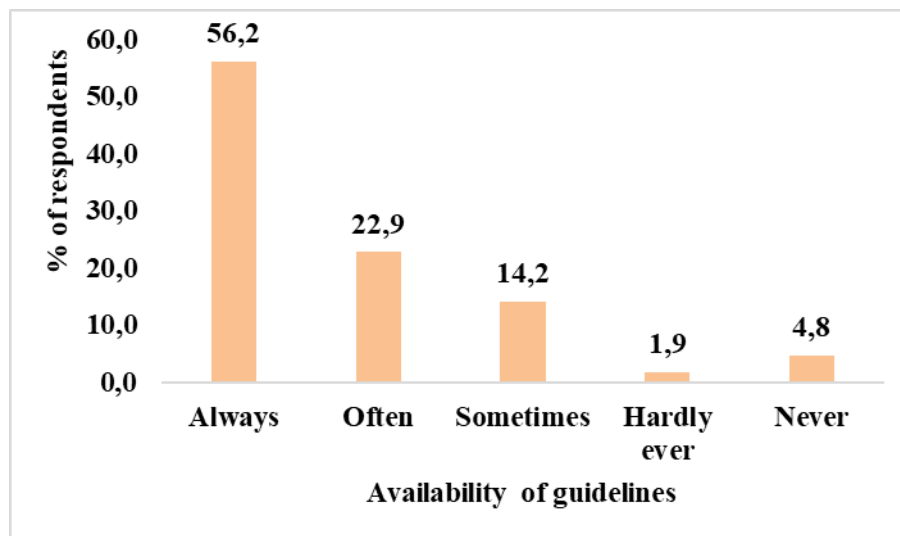


Figure 4.16 Availability of guidelines/protocol in the units

Figure 4.16 indicates the availability of guidelines/protocol to midwives in their units. The results show that the majority 59 (56.2%) of the respondents indicated that guidelines were always available, also 24 (22.9%) indicated that guidelines were often available, 15 (14.2%) of the respondents indicated that guidelines were sometimes available, the minority 2 (1.9%) indicated that guidelines were hardly ever available and 5 (4.8%) indicated that guidelines were never available. The study established that up to 20% of the respondents were operating in maternity units which disregarded guidelines/protocols. It could be deduced from these results that the issue of guidelines could not have been taken seriously in certain maternity wards and could have been a contributory factor to the problem being investigated. Maternal guidelines/protocols have been prepared for the guidance of health workers such as doctors and midwives who provide obstetric, surgical and anaesthetic services for pregnant women in district clinics, health centres and district hospitals where specialist services are not

normally available (National Department of Health, Republic of South Africa, NDH-RSA, 2015:30). The maternal guidelines deal mainly with the diagnosis and especially the management of common and serious pregnancy problems. Maternity services must strive to meet clinical guidelines set out by the authorities. (National Health Services, 2011). According to NDHRS (2015:34), guidelines/protocols should always be made available to midwives and expecting mothers. Oduro-Mensah, Kwamie, Antwi, Bamfo, of the respondents Bainsong, Marfo, Coleman, Grobbee and Agyepong's (2013: e55610) study in Ghana on "*Care Decision Making of Frontline Providers of Maternal and New-born Health Services in the Greater Accra Region of Ghana*" posits that whenever protocols and guidelines were available, they were used as decision making aids, especially when they were simple handy tools and in situations where providers were unsure what their next step in management should be. Furthermore, Oduro-Mensah et al. (2013: e55610) found that nearly 21% of intervention and comparison health facilities in Ghana did not have clinical management protocols and guidelines at the front line. In this study, the majority of the respondents confirmed that guidelines and protocols were always used in all three selected public hospitals. Therefore, the use of available guidelines/protocols were not contributory factors to perinatal mortality rate in the selected public hospitals.

4.6.2 Awareness regarding utilisation of guidelines/protocol

Utilisation of guidelines is an expectation of all maternity units throughout South Africa. To determine awareness of the utilisation of guidelines/protocols in different hospitals, respondents were asked to rate this variable with regard to their wards. Results are shown on Figure 4.16.

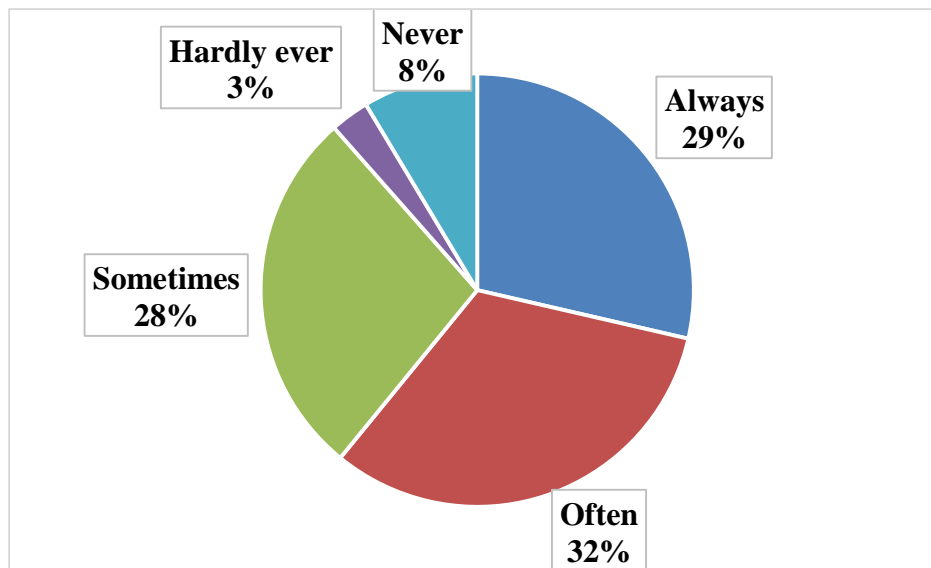


Figure 4.17: Awareness regarding utilisation of guidelines/protocol

Figure 4.17 shows the awareness regarding utilization of guidelines/protocols. Responding to the awareness regarding utilization of guidelines/protocols, almost 30 (28.6%) of the respondents indicated that there was always adequate awareness, while 34 (32.3%) of the respondents indicated that was often an awareness on utilisation of guidelines and 29 (27.6%) of the respondents indicated that guidelines were sometimes utilised, also 3 (2.9%) of the respondents of the respondents state that guidelines were hardly ever utilised and the minority 9 (8.6%) of the respondents indicated that guidelines were never utilised. The study established that the utilisation of guidelines/protocols was generally good although it was not enforced consistently in maternity wards. It would seem that, it was left to each maternity ward to implement the guidelines. Due to lack of standardisation on this factor, it could have contributed to the perinatal mortality. A study by Aljulayfi, Alrusayni, Alqahtani and Hamam (2015:13) in Saudi Arabia on dental guidelines for pregnant women, reports that 63.3% of dentists reported that pregnant women were made aware of the guidelines to be followed. The same study reports that less than 23% of the doctors were reported to not have bothered informing their patients on guidelines. It is advisable for them to have awareness regarding utilization of guidelines/protocols so as manage the women with complications in a standardized manner and help in the continuity of care in the event of the women being transferred from one level of care to another.

4.6.3 Utilisation of maternal guidelines/protocol when managing the obstetric emergencies and complications

Respondents asked whether midwives utilised maternal guidelines when they were managing obstetric emergencies and complications. Respondents expressed different opinions as shown on Figure 4.17.

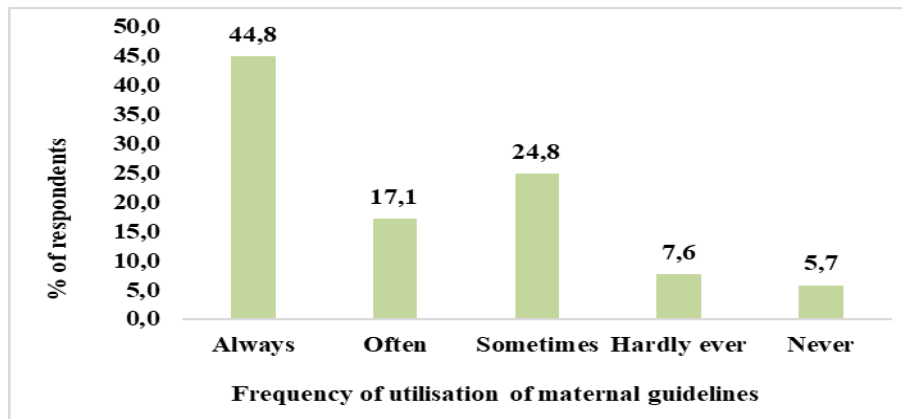


Figure 4.18: Utilisation of maternal guidelines/protocol when managing the obstetric emergencies and complications

Figure 4.18 depicts results on what respondents thought was the state of utilisation of maternal guidelines when managing the obstetric emergencies and complications. The results show that nearly 47 (44,8%) of the respondents indicated that maternal guidelines were always utilised, 18 (17,1%) of the respondents indicated that maternal guidelines were often utilised, 26 (24,8%) indicated that maternal guidelines were sometimes utilised, 8 (7,6%) indicated that maternal guidelines were hardly ever utilised and the minority of 6 (5,7%) of the respondents indicated that maternal guidelines were never utilised. It can be inferred from the results that the utilisation of maternal guidelines when managing the obstetric emergencies and complications was inconsistent with the expectations and depended on the maternity wards. The purpose of the guidelines on maternity care is to give guidance to Health Care Workers providing obstetric and anaesthetic services in clinics, community health centres and district hospitals (Irvani, Zarean, Janghorbani & Bahrami, 2015:28). Failure to have and follow standard protocols at primary and secondary levels is one of the common related problems. Under normal circumstances, maternal guidelines provide a practical approach for primary health care to manage pregnancy, labour and delivery in South Africa (SA) with the ultimate aim of reducing maternal mortality, "Review of the 2015

Guidelines for Maternity Care with relevance to congenital disorders” conducted in South Africa by Malherbe, Christianson, Woods & Aldous (2015:24). Midwives are expected to utilise maternal guidelines in managing obstetric emergencies and complications. This study established that less than 62% of the midwives thought that all midwives utilised maternal guidelines when managing the obstetric emergencies and complications. These results show that a considerable number of midwives chose to utilise guidelines while others did not choose at all.

4.6.4 Helpful of implementation of maternal guidelines/protocol help in managing complications

Under normal situations proper implementation of guidelines assist in the management of complications. However, in some situations, the implementation of guidelines is left to chance. In this study, it was necessary to assess this variable in order to determine whether it was implemented in maternity wards in sampled hospitals. The results are displayed on the pie chart, Figure 4.18.

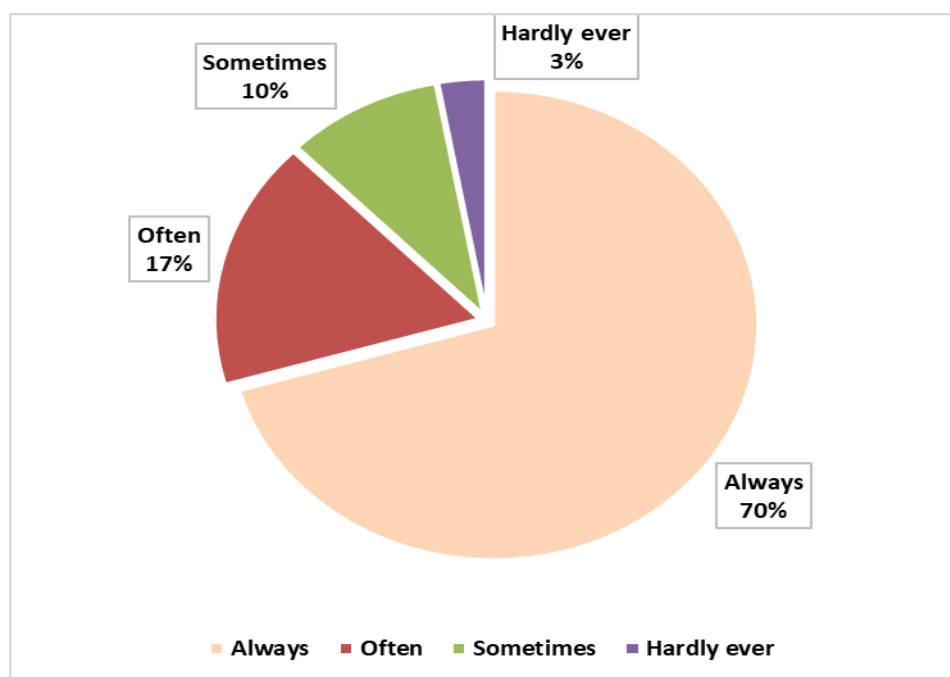


Figure 4.19: Helpfulness of implementation of maternal guidelines/protocol in managing complications

Figure 4.19 shows how respondents answered on the helpfulness of the implementation of maternal guidelines in managing complications: the majority 74 (70.5%) of the respondents

thought it was always helpful, while 18 (17,1%) thought it was often helpful, and 10 (9,5%) thought that sometimes it was helpful, and the minority 3 (2,9%) of the respondents thought it was hardly ever useful. It can be inferred from the results that the implementation of maternal guidelines was thought to be helpful by more than 80% of the respondents while less than 3% of the respondents thought otherwise. These results were consistent with those made by Hoque (2011: 259308) in Durban on foetal complications in which the majority of the mothers who had given birth with complications express that midwives were helpful during labour times. The women thought that midwives had used guidelines/protocols to assist them. Schack, Elyas, Brew and Pettersson (2014:193), conducted in Accra, Ghana also confirm how the implementation of guidelines/protocols by midwives and doctors assisted women who had complications during labour. Implementation of maternal guidelines/protocols in managing complications was not a major factor contributing to the perinatal among pregnant women.

4.6.5 Management support on utilisation of guidelines/protocols

The extent to which management supported the utilisation of guidelines in different maternity wards was of importance in this study hence the collection of data for this variable. The results are displayed on Figure 4.19.

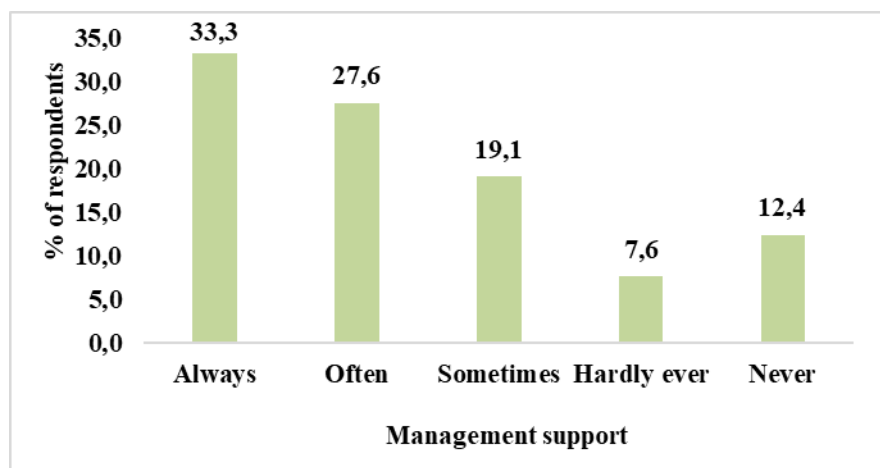


Figure 4.20: Management support on utilisation of guidelines/protocol

Figure 4.20 indicates respondents' views on whether management supported midwives on the utilisation of guidelines/protocol. The results show that almost 35 (33,3%) of the respondents indicated that midwives always received assistance, while 29 (27,6%) of the

respondents indicated that midwives often received assistance from management, 20 (19.1%) indicated that midwives sometimes received assistance from management, and the minority 8 (7,6%) of the respondents indicated that midwives hardly ever received assistance from management. Lastly, 13 (1.4%) of the respondents indicated that midwives never received assistance from management. It can be inferred from these results that some midwives in certain maternity wards did not receive assistance from the management on how to implement guidelines. It implies that some maternity wards implement guidelines according to their wishes and interpretation with the help of management. This may have put the lives of expecting mothers, unborn and new babies at risk. A study conducted in Freetown, Sierra Leone, by Ngongo, Christie, Holden and Ford (2013:1232) on management support on utilisation of guidelines by midwives indicates that management was not able to provide assistance to all maternal wards due to several factors. However, in hospitals where such assistance was given, midwives were able to utilise guidelines as expected (Ngongo et al., 2013:1233).

4.6.6 Main challenges concerning the utilisation of guidelines/protocols

Hospitals face many challenges in the question of whether to utilise guidelines/protocols. In an effort to assess the challenges faced in the utilisation guidelines, this study collected data to that end. The results are displayed on Table 4.5.

Table 4.5 Main challenges concerning the utilisation of guidelines/protocols

Challenge	f	%
Unavailability of equipment and suppliers	70	66.7
Maternal guidelines are not enough	20	19.0
Midwives are resistance to change	15	14.3
Total	105	100

Table 4.5 indicates the challenges concerning the utilisation of guidelines/protocols. When asked what they would identify as the main challenge concerning the utilisation of guidelines/protocols, majority of the respondents, 70 (66.7%) indicated unavailability of equipment and suppliers as the major challenges to the utilisation of guidelines/protocols, 20 (19%) indicated maternal guidelines as not being enough, while a very small number of respondents, 15 (14.3%) indicated midwives' resistance to change as a challenge. Not having

sufficient maternal guidelines for the midwives was most likely preventing midwives from conducting their duties effectively. Research was undertaken by Brodie (2013:1075) and conducted in Papua Guinea and Afghanistan on identifying a number of challenges faced by midwives, such as social inequality, inadequate pay to meet the basic cost of living, unsafe working conditions and physical and sexual abuse. Filby, McConville and Portela (2016:10) also argue that the challenges caused negative impact on quality of care due to burn-out and moral distress among midwives. Moral distress among midwives is the experience of being seriously compromised as a moral agent by being unable to practice in accordance with accepted professional values and standards (Brodie, 2013:1080). According to Graham and Varghese (2012: e5.) challenges cause frustration, anger, guilt, anxiety, perceived lack of control, feeling belittled or unintelligent, and negative physical symptoms. The finding of this study was consistent with that done by Mkoka, Goicolea, Kiwara, Mwangu and Hurtig (2014:108) in Tanzania which reports that the availability of drugs and equipment were a challenge as the facility could at times operate for a long time without drugs and certain essential equipment. In the event that drugs and medical supplies were made, it was reported to be insufficient and not matched to the needs of the particular facility at that specified time (Mkoka et al., 2014:109). Lack of equipment and drugs, especially in rural hospitals leads to poor maternal services as the drugs and medical supplies would be inadequate and inaccessible to women when they need them. In this study, shortage of equipment was one of the main contributory factors to perinatal mortality rate in the selected public hospitals.

4.7. SECTION 5: STAFFING AND WORKLOAD

A number of statements and questions to investigate variables due to staffing and workloads that contributed to perinatal mortality were given to respondents to show their opinions.

4.7.1 Main challenges of absenteeism due to workload

Absenteeism was another important variable that needed to be investigated. Challenges due to increased workload are generally reported all over many workplaces. Respondents were asked to indicate how absenteeism was affected by workload. Results are shown on Figure 4.20.

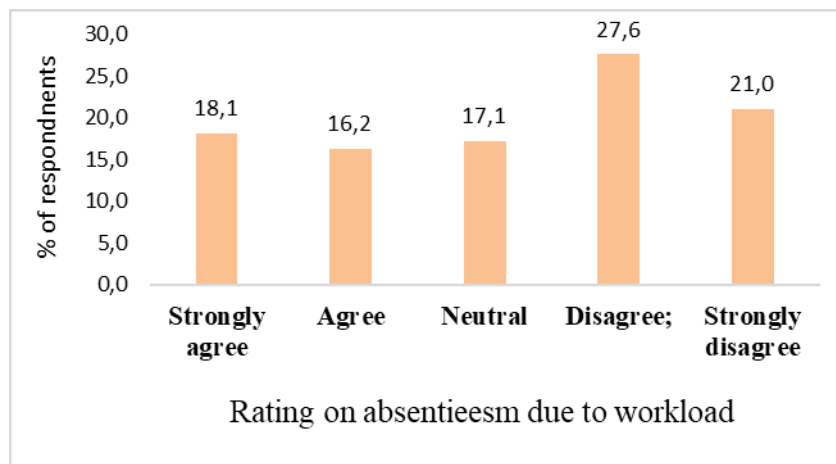


Figure 4.21: Main challenges of absenteeism due to workload

Figure 4.21 shows results of what respondents thought about absenteeism due to workload as the main challenge that midwives faced. The results indicate that 19 (18.1%) of the respondents strongly agreed, 17 (16.2%) agreed, 18 (17.1%) were neutral, 29 (27.6%) disagreed and 22 (21%) of the respondents strongly disagreed with the notion that absenteeism due to workload was the main challenge that midwives face. It could be inferred from the results that absenteeism could be attributed to workload and also to other reasons. Bhaga's (2015:14) study conducted in Pretoria on *"The Impact of Working Conditions on the Productivity of Nursing Staff in the Midwife Obstetrical Unit of Pretoria West Hospital"*, concludes that the work environment plays an important role in the life of an employee.

Bhaga (2015:15) further asserts that the quality of patient care deteriorates as nurses' workloads increase and as the level of experience decreases. A study conducted by Afhami, et al. (2016:177) in Isfahan, Iran, *"The knowledge and attitudes of midwives regarding legal and religious commandments on induced abortion and their relationship with some demographic characteristics"* also argues that midwives and other nursing staff become frustrated and disempowered when they deal with factors that are out of their control, such as increased workload due to staff shortage and also when dealing with difficult, stressed maternity patients. Afhami et al. (2016:180) also purports that nurses' absenteeism in South African health institutions is due to challenges related to poor working conditions, low pay, as well as physical exhaustion from the workload. This showed that not only workload causes absenteeism but also other challenges that midwives face.

4.7.2 State of resignations

This statement was intended to extract data about resignations. Respondents were asked to indicate their opinions on the high number of resignations. Results are shown on Figure 4.22.

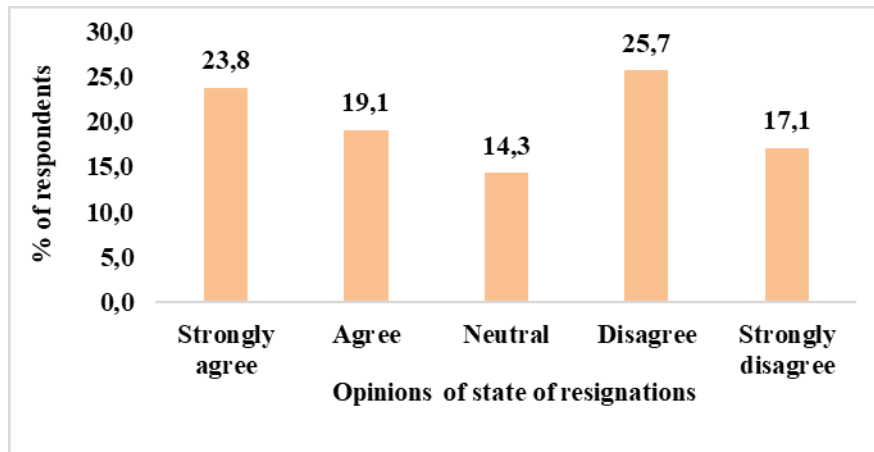


Figure 4.22: State of resignations

Figure 4.22 indicates results on respondents' opinions on the state of resignations of midwives from hospitals. The results show that nearly 25 (23.8%) of the respondents strongly agreed that resignations were very high, 20 (19.1%) of the respondents agreed, 15 (14.3%) were neutral, 27 (25.7%) disagreed and 18 (17.1%) of the respondents strongly disagree. The number of respondents who agreed, 45 (42.8%) of the respondents was equal to those who disagreed 45 (42.8%). This implies that respondents were not aware of what was going on in other hospitals' maternity wards. Based on these results, the resignation of midwives from public hospitals was a matter of concern because the shortage of staff could be a danger for patients. Stanz and Greyling's (2010:245) study on "*Turnover of nursing employees in a Gauteng hospital group*" conducted in South Africa concludes that the South African nursing profession was in a crisis as scores of professionals sought alternative employment or opted to leave the country in search of lucrative work overseas. In this study, while some respondents agreed that midwives were resigning as a matter of urgency, some disagreed to this notion. In their study conducted in Mokopane, Limpopo Province, Mogale, Mmamma, Tebogo and Malema (2015) describe staff turnover in a number of different ways, such as voluntary versus involuntary turnover, functional and dysfunctional turnover, as well as controllable and uncontrollable turnover. Voluntary turnover is due to factors such as improved career opportunities, remuneration, supervision, demographic issues and personal

reasons while involuntary turnover is due to employees' failure to comply with organisational policies and work rules and also failing to meet expected performance standards of the organisation. In many cases employees take time to make decisions about resigning.

4.7.3 Flow of the patients versus staff allocated

Flow of patients in hospitals has a bearing on the quality of service that the current staff could provide. In this study, it was important to measure patients' flow in relation to staff allocated.

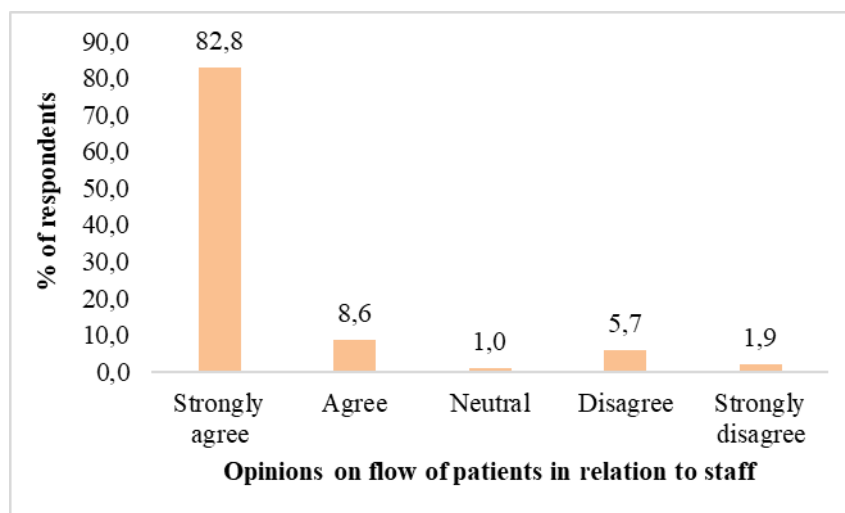


Figure 4.23: Flow of the patients versus staff allocated

Figure 4.23 indicates the opinions on the flow of patients with relation to staff allocated. From Figure 4.23, it could be noticed that the majority 87 (82.8%) of the respondents strongly agreed and 9 (8,6%) of the respondents agreed that the flow of the patients was not in relation to staff allocated on a daily basis, 1 (1%) of the respondents was neutral, 6 (5,7%) of the respondents disagreed and 2 (1,9%) of the respondents strongly disagreed. The inference made from these results was that the flow of the patients was not in relation to staff allocated on a daily basis. A study on the comparison of two resource-poor hospitals in Tanzania by Tibandebage, Kida, Mackintosh and Ikingura (2016:384) on "*Whether managers could empower nurse-midwives to improve maternal health care*" reports that pressure of work was very high in both hospitals' maternity wards. Midwives worked under pressure because they were overwhelmed by work due to shortage of resources. Tibandebage

et al. (2016:384) found that midwives who were overwhelmed by work always felt stressed and overworked as they had to perform many duties. In such situations the relationship between midwives and expecting mothers is usually seriously strained. According to Bradley, Kamwendo, Chipeta, Chimwaza, De Pinho and McAuliffe (2015), a study done in Malawi on staff in maternity wards, revealed that staff were always under pressure to attend to many patients and face the problem of trying to manage too many serious cases at once, resulting in patient care being interrupted and tasks left incomplete. Insufficient staff directly contributed to unnecessary maternal and neonatal deaths. Overwhelming midwives on duty with too many patients leads to midwives being unable to provide quality services to women in labour. It is in the best interests of the patients that their numbers are not too many for the staff on duty to give appropriate attention and treatment to. Having few midwives serving many women in labour can be regarded as a contributory factor to a perinatal mortality rate in the selected public hospitals.

4.7.4 Registered Midwife and Midwife with a specialty to cover the unit for 24 hours per day (day and night)

Respondents were asked to indicate the opinions about registered midwives and midwives with a specialty and they were not enough to cover the unit for 24 hours per day (day and night). The results are presented on Figure 4.24.

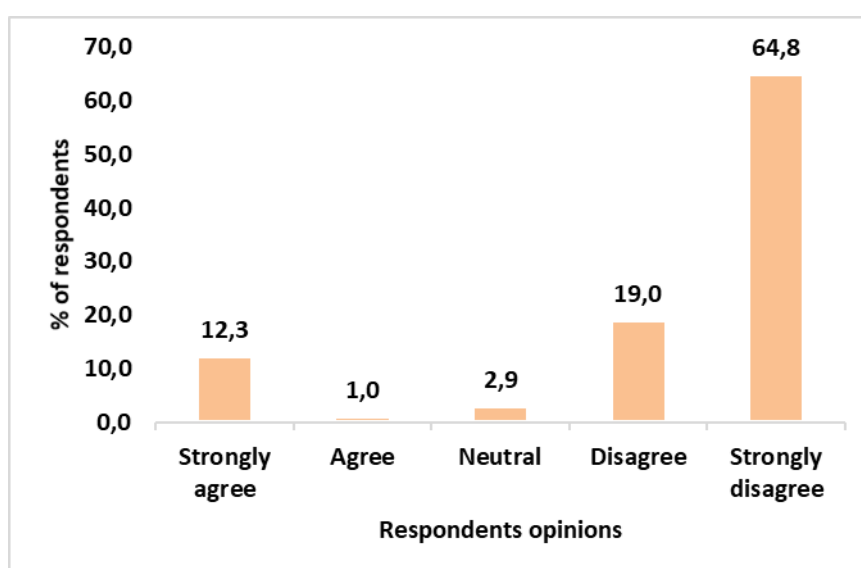


Figure 4.24: Registered Midwife and Midwife with a specialty to cover the unit for 24 hours per day (day and night)

Figure 4.24 indicates results for registered midwife and midwife with a specialty to cover the unit for 24 hours per day. The results show that the majority 68 (64.8%) of the respondents strongly disagreed that registered midwives had the specialty to cover the unit for 24 hours, while 20 (19.0%) disagreed, 3 (2.9%) of the respondents were neutral, 1 (1.0%) of the respondents agreed, while 13 (12.3%) of the respondents strongly agreed that registered midwives and midwives with a specialty cover the unit for 24 hours. In general, the majority 83.8% of the respondents disagreed that registered midwives and midwives had a specialty to cover the unit for 24 hours per day. It could be deduced from these results that there was a shortage of midwives needed to cover the units for 24 hours a day as expected. This implies that midwives were not able to provide quality services for 24 hours a day. In line with forgone discussions, a shortage of personnel was forcing the public hospitals to improvise on staff in many cases. Tibandebage, et al. (2016:384) stress that hospitals have a shortage of midwives with specialty who can cover maternity units for 24 hours. Bradley et al, (2015) say that shortages of midwives have had a serious and negative impact on maternal and perinatal outcomes as it decreased the ability of health systems to maintain a state of readiness where sufficient skilled staff, furnished with the supplies, equipment and resources needed could be available and ready to respond to women 24 hours a day, 7 days a week. Based on the results, it could be deduced that a shortage of midwives and midwives with a specialty to cover maternity units for 24 hours was a contributory factor to the perinatal mortality rate in the selected public hospitals.

4.7.5 Availability of Obstetrician and Paediatrician' to cover the unit for 24 hours per day (day and night)

With this statement, respondents were required to select the most appropriate options that match the situation at their hospital maternity wards as indicated in the ranking. Results are shown on Figure 4.24.

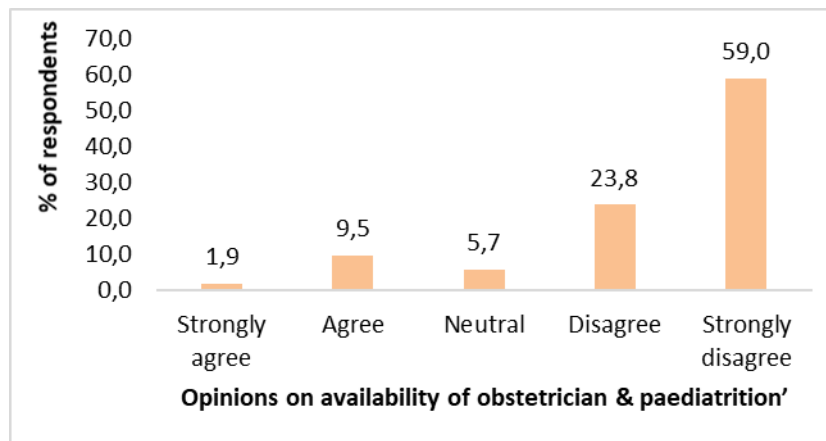


Figure 4.25: Availability of Obstetrician and Paediatrician to cover the unit for 24 hours per day (day and night)

The results on Figure 4.25 indicate that very few respondents, 2 (1,9%) strongly agreed, 10 (9,5%) agreed with the adequacy of obstetricians and paediatricians to cover a unit for 24 hours a day. The majority 25 (23,8%) of the respondents disagreed and 62 (59%) strongly disagreed with the notion that there were an adequate number of obstetricians and paediatricians to cover a unit for 24 hours a day. It could be inferred from the results that there was a shortage of obstetricians and paediatricians to cover the unit for 24 hours in most of the hospitals. Shortage of obstetricians and paediatricians to cover the unit for 24 hours could be one of the many factors affecting perinatal mortality. Due to shortage of staff and staff turnover, hospitals were not able to provide enough obstetricians and paediatricians (Henderson, Kurinczuk & Knight, 2017: 1311), literature review study conducted in Oxford, UK. This was also confirmed by Knight, Van der Meulen, Gurol-Urganci, Smith, Kiran, Thornton, Richmond, Cameron and Cromwell (2016) who argue that there was a difference in terms of the number of obstetricians and paediatricians who attended to women, the number was smaller in public than in private hospitals and this implied that there were more working hours for the former than the latter. This also means that some women could untimely give birth without obstetricians or paediatricians in public hospitals, leading to more children dying in public hospitals than those in private ones. In the event of complications, obstetricians and paediatricians should be available to solve them before there was loss of life. Therefore, lack of obstetricians and paediatricians to cover for the 24 hours was a contributory factor to perinatal mortality rate in the selected public hospitals.

4.7.6 Respondents' view regarding staff-patient ratio

This question was intended to illicit information on respondents' views about the staff-patient ratio in the wards in which they worked, results on Table 4.6.

Table 4.6: Respondents' views regarding staff-patient ratio

Statement	F	P
Patient ratio is not proportional	1	1,0
Patients are more than expected ratio	2	1,9
Patients are overflowing because clinics which are supposed to take calls are not complying	1	1,0
Patients influx is very high	3	2,9
Staff members are very few compared to patients	98	93,3
Total	105	100

Table 4.6 indicates the view of respondents regarding staff-patient ratio. Respondents expressed their views about the staff ratio: 98 (93.3%) of the respondents said staff members are very few compared to patients, 3 (2.9%) of the respondents said patients influx is very high, 1 (1%) of the respondents said patients are overflowing because clinics which are supposed to take calls are not complying, 2 (1.9%) of the respondents said patients are more than expected ratio while 1(1%) of the respondents also said that patient ratio was not proportional with more patients than staff members. The majority of the respondents 98 (93.3%) of the respondents indicated that midwives were few compared to the staff complement of the hospital. The results suggest that staff shortage was another factor that contributed to perinatal mortality. Hospitals, particularly in poor countries always face the crisis of staff turnover, insufficient and inconsistent staff training which leads to poor services being provided to patients (Van Heerden, 2015:19). Teresa et al. (2015:35) also posits that the shortage of nursing staff has been experienced for some time without proper solutions in place. The finding of this study is also consistent with that made by Bradley et al. (2015), the difficult situation in which midwives and other maternity staff are operating and the professional and emotional toll this exacts (Bradley et al., 2015). This implies that shortage of staff was a contributory factor of perinatal mortality rate in the selected public hospitals.

4.8 CHI-SQUARE TEST

Chi-square test were performed to check the existence of association between demographic (independent variables) characteristics of the sample and factors being investigated (dependent variables) at $p < 0.05$. All factors were tested against demographic variables age, qualifications and years of work experience and results scrutinised for any significant associations between variables. Only results where significant associations at $p < 0.05$ were recorded and reported in this study.

4.8.1 Age on chi-square test

Table 4.7: Age on chi-square test

Variables	n = 105	Chi-Pearson Square	df	Asymptotic Significance (2-sided) p-values
Age	Respondents trained on LINC (Limpopo Initiative for New-born Care)	30.277 ^a	4	0.000
	Respondents exposed to BANC workshops	31.120 ^a	4	0.000
	Midwives support women in labour	28.607 ^a	12	0.005
	Midwives shifted towards a more pain-relief orientated approach	29.156 ^a	16	0.023
	Midwives keep women informed about the progress of labour	28.108 ^a	16	0.031
	Respondents' views regarding the shortage of staff	26.941 ^a	16	0.042
	Respondents' view regarding staff-patient ratio	29.372 ^a	16	0.022
	Managers' support	16.324 ^a	8	0.038

4.8.1 Age on chi-square test

Chi-square results depicted in the table above show that a significant association existed between age and factors indicated at $p < 0.05$, 64.4% of midwives from the age 40 to 59 years were likely to say they were not trained in LINC or exposed to BANC workshops. The results also show that elder midwives were likely to support women in labour, highly significant at $p = 0.005$, midwives had shifted towards a more pain-relief orientated approach, $p = 0.023$, midwives kept women informed about the progress of labour $p = 0.031$. Elderly midwives were also more convinced that staff shortage was negatively affected contributed to the high mortality, $p = 0.022$. The support from manager was also significantly associated with age of respondents at $p = 0.038$, elderly midwives were more likely to describe managers as supportive.

4.8.2 Qualifications on chi-square test

Table 4.8: Qualifications on chi-square test

n = 105				
	Variables	Pearson Square	Chi- df	Asymptotic Significance (2sided) p-values
Qualification	Have you trained on essential steps in managing obstetric emergencies (ESMOE)?	13.471 ^a	2	0.001
	Do you think maternal guidelines/protocols are readily available or accessible to all Midwives in the unit?	16.517 ^a	8	0.036
	What are your views regarding the shortage of staff?	19.460 ^a	8	0.013
	What is your view regarding staff-patient ratio?	18.005 ^a	8	0.021

The results on Chi-square show that a significant association at $p < 0.05$ existed between qualification of midwives and the investigated factors that contributed to high mortality rate among infants by respondents in selected hospitals. Midwives with Diploma in Midwifery were more likely to express negative responses on certain variables with regards to high mortality rate.

4.9 SUMMARY

The research results obtained from the analysis of the information from 105 completed questionnaires were presented and discussed according to the sections of the questionnaire. The conclusions based on these results was presented according to the objectives set for this research and thereafter was contextualised within the major components of the EMHP. The recommendations arising from the conclusions was provided in chapter 5 as well as the limitations which might restrict the generalisability of these research results.

CHAPTER 5

SUMMARY, LIMITATIONS, RECOMMENDATIONS AND CONCLUSIONS

5.1 INTRODUCTION

In the previous chapter, the results of the empirical study were presented, analysed and detailed discussions' findings of the study were made. This chapter provides conclusions made and resulting recommendations of the study. The limitations encountered in conducting the study are described and possible future researches arising from this study are also stated.

The chapter also provides a summary of the value of this research study.

5.2 THE PURPOSE OF THE STUDY

The purpose of the study was to assess factors contributing to high perinatal mortality rates in the selected public hospitals of Vhembe district of Limpopo province, South Africa so that measures can be done to ensure that all Midwives and Accoucheurs have relevant knowledge and skills in caring the pregnant women during pregnancy, labour and puerperium.

5.3 OBJECTIVES OF THE STUDY

The objective of the study was to:

- Determine the knowledge of midwives regarding the care of women in labour in selected public hospitals of Vhembe district.
- Assess the attitudes of midwives towards women in labour.
- Identify the availability and use of guideline/protocol by midwives to manage complications during labour.

- Examine staffing and working factors that contribute to high perinatal mortality rates in the selected public hospitals of Vhembe district.

The research questions of the study was:

- Did midwives and Accoucheur have knowledge pertaining the care of a woman and baby during antepartum, intrapartum and postpartum?
- What attitudes did midwives have in terms of caring for a woman in labour?
- Were there any guidelines/protocols used by midwives in the management of complications during intrapartum?
- What staffing and workload factors were contributing to high perinatal mortality rates in the selected public hospitals of Vhembe District, South Africa?

5.4 SUMMARY OF THE STUDY

High perinatal mortality rates have been a perinatal problem in developing countries. According to the Institute of Race Relations (2016), South Africa still experiences a high mortality rate compared to other developing countries in the low income category. Leading cause of perinatal mortality are mainly birth asphyxia, sepsis and low birth weight according to reviewed literature. It further indicated that most of these deaths are missed opportunity and occurred due to sub-standard care and can be avoided. Although South Africa have enough money to drastically improve its' health organisation and delivery system, particularly its infant's health care (World Health Organization, 2013), generally, lack of correct and up-to-date information together with poor quality services and uncommitted health care workers' providers lead to unnecessary and avoidable loss of new-borns.

The purpose of the study was to assess factors contributing to high perinatal mortality rates in selected public hospitals of Vhembe district in Limpopo province, South Africa.

This study focused on literature review as guided by the EMHP in which relevant theoretical perspectives on the problem being investigated were examined. The purpose of a literature review in this study was for the researcher to gain an understanding of the existing research and debates which were relevant particularly to the research problem of the study. While building own knowledge on the subject, the literature review helped the researcher in

understanding the important concepts, research methods that were applicable to the researcher's field. Based on the literature review, South Africa was facing problems in addressing high perinatal mortality rates in poorly resourced public hospitals, particularly low income areas.

A quantitative research approach was used in this study in which data was collected using a self-developed questionnaire designed, containing a number of close-ended questions which addressed different variables on factors contributing to high perinatal mortality rates in the three selected public hospitals. A detailed explanation of the quantitative, descriptive, cross-sectional and exploratory designs was attended to.

The population that was used composed of midwives in public hospitals; sampling technique for hospitals and midwives was purposively selected and the sample size consisted of 105 individuals. The criteria, inclusion and exclusion used in selecting hospitals and midwives were also elucidated.

Data collection and instruments used were also elaborated including the design and development of the questionnaire, which included pre-testing and pilot study. Ethical considerations were observed in the study to safeguard the confidentiality of the respondents and validation were elaborated.

Results were presented on frequency tables and graphs. A quantitative descriptive analysis was done per questionnaire items under respective research objectives in order to answer research questions. Section 1 of Chapter 4 was on demographic results, Section 2 was on knowledge of midwives regarding the care of woman intrapartum, Section 3 was attitudes of midwives caring for a woman in labour, Section 4 addressed utilisation of guidelines/protocols and Section 5 was staffing and workload factors.

On demographic results it was found that:

The majority of the respondents 79.1% were from Hospitals 1 and 3. The majority of the respondents 103 (98.1%) were females, showing that midwifery had remained a gender discriminating component of nursing globally since it still female dominated profession. The

results showed that the majority of the respondents 76 (76.3%) in the selected hospitals were aged between 40 and 59, the most productive age group. With regards to nursing qualifications, a diploma in midwifery was the most common nursing qualification that the majority of the midwives still had and very few individuals had specialty courses. Nursing experiences were distributed evenly among various age groups but with the majority being highly experienced. The majority of the maternity units' bed allocation was way below the expected number of 28–32. In this study it was less than 19.

5.4.1 Summary of findings of research questions

Section 2 was on knowledge of midwives regarding the care of woman intrapartum

The majority of the midwives in the selected public hospitals lacked knowledge in various aspects that would have made their operations and functions in maternity wards effective. This was evidenced by lack of training in key knowledge and skills areas such as ESMOE, HBB, LINC, BANC and EOST midwives needed in order to perform certain important activities when pregnant women were in labour. Lack of training would mean that midwives depended on different knowledge and skills in performing a single activity, thereby endangering the lives of the mother and the baby. The findings from the 12 variables investigated in this section confirmed that lack of knowledge was one of the contributing factors towards the perinatal mortality rates in the three selected public hospitals in Vhembe district.

Section 3 was attitudes of midwives caring for a woman in labour

- Attitudes of midwives were regarded as very crucial because they determined the way they discharged their duties and how they conducted themselves when on duty. The attitudes of respondents towards women in labour were mixed, less positive than negative. Respondents were supportive to women in labour and this enabled them to perform their duties and responsibilities effectively.
- Respondents were able to evaluate women's ability to cope with labour.

- Not all of the respondents in the selected public hospitals had shifted towards a more pain-relief orientated approach. Some attitude problems indicated that certain respondents still had negative attitudes towards the use of pain free methods.
- Some of the respondents in the selected public hospitals were not able to help women manage labour pains without the use of pain medication.
- Some respondents wanted pregnant women to undergo natural labour without pain relief medication.
- The majority of respondents in the selected public hospitals encouraged and assisted the pregnant women using the breathing and relaxation techniques. This was not a contributory factor to high perinatal mortality rates in the selected public hospitals in Vhembe district.
- The majority of the respondents in the selected public hospitals were able to provide continuous support to women in labour.
- The majority of the respondents were reported to have been continuously informing women on the progress of labour. This showed that midwives had a positive attitude towards women in labour.

Section 4 addressed utilisation of guidelines/protocols when managing complications For this research question, the findings made with regards to the utilisation of guidelines/protocols were:

Maternal guidelines/protocols were readily available or accessible to most midwives in the unit as indicated by 79.1% of respondents from the three selected hospitals. This was not a contributory factor.

- The implementation of guidelines/protocols to assist in managing complications was regarded as either being always or often helpful, suggesting that this variable was not a contributory factor to perinatal mortality rates in the selected public hospitals in Vhembe district.
- There was lack of awareness with regard to the utilisation of guidelines for women in labour by a considerable number of respondents in the selected hospital. This was a contributory factor towards high perinatal mortality rates in the selected public hospitals.
- Respondents utilised maternal guidelines when managing the obstetric emergencies and complications but it was to their discretion. This was likely to be a contributory

factor to high perinatal mortality rates in the selected public hospitals in Vhembe district.

- Some respondents always received support from management regarding the utilisation of guidelines/protocols while others did not. This could also have contributed to high perinatal mortality rates in the selected public hospitals in Vhembe district.
- The main challenges faced by the three selected public hospitals were unavailability of equipment, shortage of suppliers of maternal guidelines and respondents' resistance to change. These could also have been the contributory factors to high perinatal mortality rates in the selected public hospitals in Vhembe district.

Section 5 was on examining staffing and workload factors

The findings for this research question were derived from a set of variables used to extract data from respondents.

- Absenteeism due to workload was regarded as one of the main challenges by some respondents while others disagreed, implying that not only workload caused absenteeism but also other challenges that midwives faced.
- Some respondents from the selected public hospitals agreed that the state of resignations of midwives was very high. This had an effect of the perinatal mortality rates in the selected public hospitals in Vhembe district.
- The majority of the respondents 91.5% indicated that the flow of the patients was not in relation to staff allocated on a daily basis in maternity wards in the three selected hospitals. It was found that having few midwives serving many women in labour was a contributory factor to perinatal mortality rates in the selected public hospitals in Vhembe district.
- Registered Midwife and Midwife with a specialty were not adequate to cover the unit for 24 hours per day as the majority of the respondents were at 79.8%. There was a shortage of midwives and midwives with a specialty to cover maternity units for 24 hours in maternity wards of the selected public hospitals in Vhembe district.
- There was a shortage of Obstetricians and Paediatricians to cover the units for 24 hours per day (day and night) in the selected public hospitals in Vhembe district. Lack of

obstetricians and paediatricians to cover the units for 24 hours was a contributory factor to perinatal mortality rates in the selected public hospitals in Vhembe district.

- The number of midwives in the maternity units was smaller than the numbers in other staff complements of the hospital causing them to do even more work than expected.

5.5 INTEGRATION OF FINDINGS RELATED TO THEORETICAL FRAMEWORK

This study was designed to study factors that contributed to high perinatal mortality rates in selected public hospitals of Vhembe District. The study collected data from a sample of midwives based on a number of variables intended to measure general characteristics of midwives (interpersonal), knowledge of midwives regarding the care of a woman intrapartum and attitudes of midwives in terms of caring for a woman in labour (interpersonal processes).

The EMHP informs this study that midwives as individuals are bound to be influenced by the environment in which they work in various maternity wards across Vhembe district public hospitals. Respondents are aware of factors that contribute to perinatal high mortality rates and they are also aware that they are part of the problems and solutions. In an effort to study the factors contributing to high mortality rates in selected hospitals in Vhembe district, the researcher uses the EMHP to gain more insight into the problem and it could be solved.

5.5.1 Intrapersonal factors

Based on the interpretation and analysis of the levels of the EMHP, it was found that midwives' attitudes, beliefs, understandings, knowledge and skills of operations and interpretations and implementations of policies, views on institutional policies, and level of education hampered the promotion of health programmes and interventions in selected hospitals. Nurses with low educational levels were not implementing policies and protocols as expected. Though they were aware of the gravity of not following protocols and regulations, respondents who lacked basic knowledge in certain strategies showed slightly negative attitudes towards the use of pain relief during labour. Respondents were not

concerned about their own learning to improve in new ways of assisting mothers in labour but stuck to old ways of doing things. The resignation of some midwives was due to the way they viewed their role in assisting mothers in labour which was subdued by interpersonal problems related to work overload. Respondents who had negative attitudes towards their job were more likely to see the presence of many expecting mothers in their wards as an unnecessary burden which could be overcome by resignation or overlooking essential procedures leading to a high mortality rate. This implied that lack of intrapersonal skills was also a contributory factor to high mortality rates in the selected hospitals.

5.5.2 Interpersonal processes and primary groups

In this study, it was established that, respondents got assistance from their colleagues – especially the management who were well acquainted with new trends in assisting mothers in labour. However, some were reluctant to get the assistance or information and acted incorrectly when confronted with a new situation. The stagnation of midwives in taking up training courses could be a result of lack of information to where such courses could be done or lack of knowledge on the importance of the courses towards their duties. Poor interpersonal factors led to midwives not providing essential services during their operations. Poor educational level led to poor interpersonal skills and eventually cascaded due to high mortality rates.

5.5.3 Institutional factors

Public hospitals being studied seemed to have policies and protocols that midwives were supposed to use. However, lack of supervision by management led to the overlook of this important factor. Respondents were aware of the importance of these documents, but because of lack of enforcement of their use, the documents were ignored. This would imply that, respondents used ad hoc rules or trial and error during cases of emergency in the maternity wards.

5.5.4 Community factors

Relationships among public hospitals and provincial health organisations exist through facilitation of various courses that midwives undergo. Public hospitals work under defined policies and regulations that the management must enforce or follow. Respondents were

found to be forthcoming towards pregnant women thereby maintaining a positive relationship with the community regardless of high mortality rates being experienced. Big public hospitals also have different departments to which midwives are drawn. A positive link among the departments related to the maternity department provided good experience to midwives, particularly those who wanted to expand their educational knowledge and skills. Midwives in the selected public hospitals tended to move to other departments where there was less work or good staffing.

5.5.5 Public policy

Guidelines/protocols used by respondents when managing the complications intrapartum (institutional factors and policies) and staffing and workload (institutional, community and policy factors). Due to the dynamics and interrelatedness of the factors being studied, this study found it appropriate to utilise the EMHP, a variation of Bronfenbrenner's Ecological Systems Theory (Richard, Gauvin & Raine, 2011:307-326). Such policies extend to the staffing maternity wards and determine the professional conduct of midwives and other nurses in the hospital. Policies also determine who should do what under different situations. In this study, policies and regulations were available in all maternity wards but their use was not monitored as this was left to individual midwives to decide. Policies also stipulated who should go for in-service training and when this was not followed, the consequence was high mortality rate of newly born babies in selected public hospitals. Similarly, the framework was used to understand the causes and potential interventions to modify health related behaviour change in midwives. Based on this framework, this study found that most of the factors being investigated were subject to the behaviour of respondents and the environment they worked as contributing to high mortality rates in the selected public hospitals. Lack of use of intervention strategies during complications by some respondents is a case in question.

5.6 CONCLUSIONS

Based on the findings of the study the research made the following conclusions:

Lack of knowledge was a contributory factor to perinatal mortality rates in the selected public hospitals in Vhembe District. This was due to lack of training in various important

key knowledge areas and skills that respondents needed to function effectively in maternity wards under different conditions daily.

Attitudes: There are situations in which respondents had a positive attitude towards women in labour, particularly supporting women in labour, evaluating women's ability to cope with labour pains, encouraging and assisting women in labour to breathe and also communicating or reporting to the women in labour about the progress of the labour or birth process. These attitudes were not contributory factors to high perinatal mortality rates. Negative and unsupportive attitudes by certain respondents on pain-relief orientated approach, rather preferred pregnant women to undergo natural labour without pain-relief medication. Some respondents were not able to help women to manage labour pains without the use of pain medication, a sign of a negative attitude to women in labour. These negative attitudes were some of the contributory factors to high perinatal mortality rates. It could be concluded that some of the respondents' attitudes were contributory factors to high perinatal mortality rates in the selected public hospitals in Vhembe district.

Guidelines/protocol: All maternity wards in the selected public hospitals had guidelines/protocols available and accessible for use in assisting in the management of complications with women in labour, therefore were not perceived as contributory factors to high perinatal mortality rates. However, the utilisation of maternal guidelines/protocols in managing the obstetric emergencies and complications, lack of support by management in the utilisation of guidelines/protocols and the main challenges related to the unavailability of equipment, shortage of suppliers of maternal guidelines and respondents' resistance to change were the contributory factors to high perinatal mortality rates in the selected public hospitals in Vhembe district.

Staffing and workload: There were several factors related to staffing and workload that were perceived as the contributing factors to high perinatal mortality rates in the selected public hospitals. Poor staffing was characterised by shortage of registered respondents/respondents with specialty to cover maternity units for 24 hours in maternity wards, shortage of Obstetricians and Paediatricians to cover the units for 24 hours per day (day and night) in the selected public hospitals, and a low number of respondents compared to other maternity staff.

It was also concluded that factors such as absenteeism, resignations and influx of patients in the selected public hospitals contributed to the high perinatal mortality rates.

5.7 LIMITATIONS

As with any empirical research, there are chances that flaws in the design, data, interpretations and discussions occur. The sample used in this study was too small to generalise the findings and conclusions to other situations. The use of a single data collection instrument, the questionnaire, was not sufficient to provide vital data on the experiences of the midwives. Time to conduct the research was another constraint due to other commitments at work by the researcher and the respondents. Access to study units also limited the choice of study units as some hospitals imposed their own requirements prior to data collection of which the researcher had not been prepared for such development. Self-administering questionnaires increased the chances of the researcher interfering with respondents, thereby introducing biasness in the manner the questions were answered. The respondents may have been tempted to please the researcher, whom they might have been familiar with by intentionally hiding information about themselves, for example, questions dealing with issues of attitudes. Being a novice researcher, selecting the most appropriate design was another limitation.

5.8 RECOMMENDATIONS

Recommendations emanated from a number of findings in this study that show disparities between the expected level of knowledge and skills that respondents were expected to have and the resulting situation. Recommendations were made in:

Training in basic knowledge and skills area:

- It was recommended that all in-service training, courses or workshops should be compulsory to all midwives and these should be taken periodically with the hospitals maintaining records for those who have received. It is also recommended that such training should not be tied to incentives but to responsibilities and accountability.

- It was recommended that all midwives should be compelled to use guidelines/protocols whenever undertaking important operations and a mechanism to check the use of such guides be implemented.
- Public hospital authorities should take it upon themselves to encourage midwives with low educational qualifications to enrol for higher qualifications.

5.8.1 Midwifery practice

It was also recommended that:

- Midwives be encouraged to be consistent in the utilisation of maternal guidelines when managing complications during antepartum, intrapartum and postpartum;
- Services be audited to improve service delivery;
- Midwives attend perinatal mortality review meetings frequently in order to develop an awareness among health care professionals that would result in the improvement in providing quality patient care.

5.8.2 Education training

It was recommended that all midwives should have a higher qualification in midwifery and also be involved in short course workshops – to start with tutors. Midwives to be encouraged to conduct drills routinely at all institutions.

5.8.3 Policy makers

The study also recommended that: new policies and guidelines be developed while the existing ones be reviewed and updated; policy makers should ensure that guidelines/protocols were being implemented by all staff in the maternity wards (registered midwives and doctors, especially the interns).

5.8.4 Researcher

There were many issues related to high mortality rates which this study hardly addressed. The areas of further research should include:

- Investigate the larger scale so that the results can be generalized
- Research to involve the community e.g. mothers as the recipients of care

5.9 SUMMARY

This chapter summarised and discussed the whole research project, including the limitations of the study and recommendations.

The objectives of the research was concluded to assess the factors contributing to high perinatal mortality rates, through information obtained from completed questionnaires regarding knowledge, attitude, utilisation of maternal guidelines/protocol, staffing and workload.

The conclusions drawn from this study supported the assumptions that there are factors related to antenatal, labour and delivery care and postnatal and nursery care that contribute to perinatal mortality.

The findings of this research supported those found in the literature (see section 2.3.3, 2.3.4, 2.3.5) and supported by theoretical model EMHP (see section 2.5) and other researchers, thus emphasising the urgency for improving the care of pregnant mothers and their babies through training of midwives on ESMOE and conduct EOST drills, effective implementation of guidelines and protocols when managing women in labour and new-born care. Recommendations were made, based on the findings of the research, to improve the quality of care of pregnant women and new-born babies in order to reduce high perinatal mortality rates.

5.10 CONCLUDING REMARKS

In view of lack of knowledge among midwives due to lack of training, it is recommended that all in-service workshops and training be compulsory to all midwives and midwifery nursing lecturers preferably, as the source of knowledge and these should be taken periodically with the hospitals maintaining a record. It is also recommended that such training should not be tied to incentives but to responsibilities and accountability.

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