

**THE EVALUATION OF STRATEGIES USED TO REDUCE MATERNAL MORTALITY
IN THE FEZILE DABI DISTRICT (FREE STATE PROVINCE)**

by

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submitted in accordance with the requirements

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MASTERS OF PUBLIC HEALTH

at the

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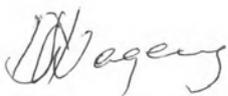
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November 2014

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DECLARATION

I declare that **THE EVALUATION OF STRATEGIES USED TO REDUCE MATERNAL MORTALITY IN THE FEZILE DABI DISTRICT (FREE STATE PROVINCE)** is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



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THE EVALUATION OF STRATEGIES USED TO REDUCE MATERNAL MORTALITY IN THE FEZILE DABI DISTRICT (FREE STATE PROVINCE)

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ABSTRACT

The purpose of this study was to describe and evaluate the strategies used to reduce maternal mortality of the Fezile Dabi District in the Free State Province, South Africa. A quantitative descriptive study was conducted at three hospitals to describe and evaluate the strategies. Data collection was done by using the Maternal and Neonatal Programme Effort Index (MNPI) self-administered questionnaire. The study population comprised of 71 (midwives (52), doctors (13), management-operational managers (6). The overall response rate for the three hospitals was (43.5%). The study indicated that programme efforts for maternal health are similar across the three hospitals, however, there are particular areas in each hospital that need more attention. The ratings of all the strategies generally showed weak to partial effort. The findings revealed general poor performance under the following strategies: postpartum care, training arrangements, information, education, communication and hospital protocols. Based on the study results, the quality of maternal health care need to be improved.

Key concepts

Evaluation; maternal health; maternal mortality strategies.

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Dedication

In the memory of my grandparents, Mr Macheoane and Mrs Macheoane who contributed positively to my childhood, youth and character development.

To my mother Ms JM Macheoane, who is the founder and pillar of my educational background.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ALSO	Advanced Life Support in Obstetrics
AU	African Union
AUC	African Union Commission
CARMMA	Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa
CEDAW	Convention for the Elimination of Discrimination against Women
EC	Emergency Contraceptive
DFID	Department for International Development
EmOC	Emergency Obstetric Care
FS	Free State
IFPPF	International Family Planning Fellowship Programme
IMPACT	Initiative for Maternal Mortality Programme Assessment
HIV	Human Immunodeficiency Virus
IUD	Intra Uterine Device
LHWs	Lady Health Workers
MDG	Millennium Development Goals
MMR	Maternal Mortality Ratio
MNCH	Maternal Neonatal Child Health
MNPI	Maternal and Neonatal Programme Effort Index
NALS	Neonatal Advanced Life Support
NICE	National Institute for Health and Clinical Excellence
NCCEMD	National Committee on Confidential Enquiries into Maternal Deaths
NHIS	National Health Insurance System
SA	South Africa
SRHR	Sexual and Reproductive Health and Rights
SSA	Sub-Saharan African

UK	United Kingdom
UN	United Nations
UNO	United Nations Organisation
WHO	World Health Organization

APPENDICES

- Appendix A Letter seeking consent from the Department of Health: Free State
- Appendix B Letter seeking consent from management of hospitals A, B and C
- Appendix C Information form for the study respondents
- Appendix D Consent form for the study respondents
- Appendix E MNPI self-administered questionnaire
- Appendix F Ethical clearance from the Department of Health Studies Higher Degrees Committee, Unisa
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- Appendix H Letter of approval: Management approval: hospitals A, B and C
- Appendix I Request and approval to use the MNPI questionnaire

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

This chapter presents the orientation to the study and includes background information about the research problem, the research problem, the aim and significance of the study, definition of terms and theoretical foundations of the study. It briefly outlines the research design, the method and the scope of the study.

1.2 BACKGROUND INFORMATION TO THE RESEARCH PROBLEM

Zureick-Brown, Newby, Chou, Mizoguchi, Say, Suzuki and Wilmoth (2013:32) state that maternal mortality is a key indicator of international concern, and its reduction has long been a challenge in low-income countries, despite the existence of effective interventions. The focus on maternal mortality as an important development measure, dates back at least to the 1980s. During this period the researchers first highlighted the role of complications related to pregnancy and childbirth in death rates among women of reproductive age and noted the inadequacy of attention paid to addressing these largely preventable deaths. Also, in the mid-1980s, the World Health Organization (WHO) estimated that approximately half a million women died yearly from maternal causes as stated by Zureick-Brown et al (2013:32). In spite of wide scale initiatives to humanise and individualise care, negative birth experience remains a problem for many women as cited by Overgaard, Fenger-Grøn and Sandall (2012:979).

Knight, Self and Kennedy (2013:1) state that the massive difference in the maternal mortality ratio (MMR) between rich and poor countries is one of the largest disparities of any public health statistic, including under-five mortality. While there has been real progress in reducing mortality rates in children under five, the reduction in MMR's has fallen well short of the Millennium Development Goal 5 which states that maternal mortality ratio must be reduced by three-quarters target by 2015. Paradoxically, it is not due to a lack of effective, evidence-based interventions that this problem persists. The WHO estimates that at least 88-98% of maternal deaths can be averted with timely

access to existing, emergency obstetric interventions. The majority of maternal deaths are clustered around labour, delivery and the 24 hours postpartum (Knight et al 2013:1).

At the millennium summit in September 2000, the largest gathering of 189 world leaders in history adopted the United Nations (UN) millennium declaration. The leaders committed their nations to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets. The targets have become known as millennium development goals (MDGs) with a deadline of 2015 (UNO 2008). Millennium development goals are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions – income poverty, hunger, disease, lack of adequate shelter, promoting gender equality, education and environmental sustainability. They also address basic human rights for example, the rights of each person on the planet to health, education, shelter and security. The fourth and fifth goals aim to reduce child mortality and improve maternal health by three-quarters between 1990 and 2015 (UNO 2008).

Banchani and Tenkorang (2014:1) state that achieving the MDGs, especially improving maternal health has increasingly become the central focus of many multilateral and bilateral donor agencies. Although the developmental agenda emboldened in the MDGs address all countries of the world, sub-Saharan African countries (SSA) have the greatest challenges and stand to benefit most from the promotion of its principles, compared to other regions of the world. In comparison to the rest of the world, SSA countries have the highest rates of poverty and illiteracy, as well as the highest rates of child mortality, maternal mortality, Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) and malaria. By December 31, 2014, fourteen out of the fifteen years for reaching the targets and indicators of the MDGs would have passed as stated by Banchani and Tenkorang (2014:1).

The Department of Health (South Africa [Sa]:8-9) indicates and explains the Campaign on Accelerated Reduction of Maternal and Child Mortality In Africa (CARMMA). CARMMA is an initiative of the African Union Commission (AUC) to promote and advocate for renewed and intensified implementation of the Maputo Plan of Action for Reduction of Maternal Mortality in Africa and for the attainment of MDG 5. Although the principal focus of CARMMA is maternal mortality, it also includes reduction of child mortality. The 15th Session of the Ordinary Session of the AU Assembly recommended

that issues of newborn and children be covered in CARMMA and for the development of the practical strategies. CARMMA derives its significance from previous commitments made by African Heads of States on Maternal Health Care. This includes the 2005 Continental Policy Framework on the Promotion of Sexual and Reproductive Health and Rights (SRHR) in Africa, the Maputo Plan of Action (2006-2010 extended to 2015). The commitment also outlines the Abuja Call for Accelerated Action towards Universal Access to HIV/AIDS, Tuberculosis, and Malaria services in Africa (2006-2010 extended to 2015), the Africa Health Strategy (April 2007-2015); the International Consensus on MDG 5 and others. CARMMA's general objective is to accelerate the implementation of key recommendations and strategies to reduce maternal and child morbidity and mortality. This will be achieved through effective advocacy for quality maternal and child health care and health system strengthening. Lastly, through empowerment and involvement of the community and effective collaboration with partners and relevant stakeholders as indicated by the Department of health (South Africa [Sa]:8-9).

South Africa's reproductive health policies and the laws that underwrite them are among the most progressive and comprehensive in the world in terms of the recognition given to human rights, including sexual and reproductive rights (South Africa 2013:76; Ramkissoon, Searle, Burns & Beksinska 2010:34). Despite this investment in public health there is a high and increasing level of maternal mortality in South Africa. Poor transport facilities, lack of proper health care facilities and lack of appropriately trained staff. The latter is responsible for an inability to follow standard procedures and poor initial assessment and diagnosis, are reported to be some of the factors that hinder progress in reducing maternal mortality in South Africa (South Africa 2013:76). Ninety-one percent (91%) of pregnant women currently have access to antenatal care with a contraceptive prevalence rate of 60%. Births attended by skilled personnel are 91% for the country as a whole; with a distribution of 85% in the rural areas and 94% in the urban areas. It is evident that maternal mortality is both a multi-dimensional health and broader developmental challenge. Improved sexual and reproductive health is also dependent on a range of other factors including education, decent work, safety, clean water and sanitation, and adequate transport facilities as stated in the MDG Report (South Africa 2013:76).

Women living in poverty and in rural areas, and women belonging to ethnic minorities or indigenous populations, are among those particularly at risk of complications from

pregnancy and childbirth and mortality specifically for 15-19 year old women and adolescent girls in developing countries (Hunt & De Mesquita [Sa]:4; Jat, Ng & Sebastian 2011:8). Health experts agree that the interventions needed to avert much of the burden of maternal and perinatal death and disability are known (World Bank 2009:1). The concept of knowing what works in terms of reducing maternal mortality is complicated by a huge diversity of country contexts and of determinants of maternal health (Campbell & Graham 2006:1284; Jat et al 2011:2). However, it has become increasingly clear that the success of maternal mortality reduction interventions depends on the capacity of the health system in the country to deliver quality care as well as factors in other sectors such as girl's education, good roads, and available transport for emergencies (World Bank 2009:1).

Both maternal and infant mortality are considered sensitive indicators of whether or not the health system as a whole is functioning effectively and can indicate general progress on other health indicators as well (World Bank 2009:1). The interplay of socio-economic factors and gender inequalities exert a negative outcome on maternal health, affecting not only the extent to which health care services are accessed and utilised, but access to family planning services as well; how to deliver these healthcare interventions to the poor and underserved; making empowerment of women and girls essential in lowering maternal mortality as indicated by Liljestrand (2000:513), South Africa (2013:76) and Jat et al (2011:4).

In recognition of the need to reduce maternal mortality, the new democratic government of South Africa declared maternal death a notifiable condition in 1997. A National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD) was appointed. The NCCEMD is responsible for confidential enquiry into maternal mortality in South Africa and in doing so has developed a reporting system for maternal deaths as stated by Department of Health (South Africa 2007:1). According to this report the burden of maternal morbidity and mortality remain unacceptably high in South Africa. South Africa, also a middle-income country, has unfortunately seen an increase in maternal mortality, related mainly to deaths caused by HIV and AIDS (Buchmann [Sa]:1; Odhiambo 2011:2-5). According to Department of Health (South Africa 2007:1), 38% of maternal deaths were 'clearly avoidable' within the health system (administration or health worker deficiencies). Eighty-five percent of anaesthetic accidents and 77% of haemorrhage-related deaths were considered avoidable.

Of all the MDGs, the least progress has been made on MDG 5-reducing maternal mortality by three-quarters by 2015 as stated by the (World Bank 2009:1). Maternal mortality also comes with a high cost to the rest of society. Costs are both direct, involving mostly the cost of health care (either to families or to the health system), and indirect, in the form of income and productivity lost for both the mother and the family (child health, growth and education all suffer when mothers die) (World Bank 2009:1). It is of serious concern that the current level of maternal mortality in South Africa is far higher than the MDG target of 38 per 100 000 live births by 2015. The most recent estimates of 269 maternal deaths per 100 000 live births for 2010 suggest that South Africa is still lagging behind in meeting the MDG target (South Africa 2013:76).

1.2.1 Source of and background to the problem

1.2.1.1 Source of the problem

Schoon (2013:534) and (South Africa 2010:72) mention that maternal mortality in the Free State Province ranks among the highest in South Africa. Various strategies are being implemented to reduce the mortality rates within the province. Antenatal care is provided at all primary healthcare clinics but while 90% of the community has access to these sites, giving birth before reaching these remains a problem. Schoon (2013:535) also indicates that while confinements occur in formal labour wards, not all hospitals have the staffing profile to provide a 24-hour comprehensive emergency obstetric care (EmOC) service.

The Fezile Dabi District (previously known as the Northern Free State District) is situated in the Free State Province. The District is divided into four sub-districts namely Moqhaka, Metsimaholo, Ngwathe and Mafube. There are twelve mobile clinics, thirty-three primary health care clinics, five community health care centres, nine emergency medical services stations, four district hospitals, one provincial hospital, three private hospitals/clinics and several private health care providers (South Africa 2014:12). Maternity services are provided at all five hospitals as well as at Community Health Centres. The maternal and child health programme is one of the priority programmes within the Free State Province and the District. However, Fezile Dabi District in the Province has been identified as the District with poor performance on the achievement

of maternal and child health targets measured from the district health information system (DHIS) and Millennium Development Goals 4 and 5 (UNO 2008; South Africa 2014:31; South Africa 2010:72). The district is challenged by a shortage of health professionals, under-resourced emergency medical services and district hospitals are geographically distanced from the regional hospital (South Africa 2014:12; 72). The district experiences serious shortage of staff to perform duties and fulfil service delivery mandate. The areas that are seriously affected are the Mafube Local Municipality and parts of Moqhaka in the Viljoenskroon area (South Africa 2014:12). Boitumelo Regional Hospital is situated in the Moqhaka sub-district in an urban area with a population of 74 580. The District has a population of 217 652.1 of which 185 500.4 (85%) do not have medical insurance (South Africa 2014:45).

All the maternal complications from the periphery (all the sub-districts in the Fezile Dabi District) are referred to Boitumelo Regional Hospital for further management (South Africa 2014:25, 29). Consequently Boitumelo regional hospital is faced with an increasing number of patients particularly in the maternity wards. The Free State Province's facility maternal mortality rate was 288 per 100 000 live births for 2014/2015 (South Africa 2010:71, 72; South Africa 2014:29). The District's facility maternal mortality rate was 125 per 100 000 live births for 2012/2013 (South Africa 2014:30). The targeted progress is 100 per 100 000 live births or less (South Africa 2014:30). This has a negative impact on the performance of the regional hospital and the Millennium development goals in the Fezile Dabi District and Free State Province. Strategies implemented to reduce maternal mortality in the district were therefore evaluated to identify their effectiveness to reduce maternal mortality and the provision of effective maternal healthcare service delivery.

1.2.1.2 Background to the problem

Odhiambo (2011:2-3) indicates that South Africa's commitment to reduce maternal deaths under the UN millennium development goals is headed for a crashing failure. South Africa's Millennium development goal country report states that the number of women dying in childbirth in Africa's most industrialised country has quadrupled in 20 years. Odhiambo further emphasises the need for accountability for maternal health care in South Africa; and reported that more than 4,500 mothers die each year in a country where 87% of women give birth in clinics or hospitals, maternity care is free and

the government spends \$748 per person, per year on public health. This calls for accountability in the health care system not merely during the birth, but during postpartum care as it is also vital but often neglected (Odhiambo 2011:2, 5-7).

Department for International Development (DFID 2005:1) cited that behind these deaths, related factors include: poorly functioning inequitable health systems; weak legal and policy frameworks and community beliefs that 'hide' pregnancy and childbirth. (DFID 2005:2; Prata, Passano, Rowen, Bell, Walsh and Potts 2011:89) maintain that achieving MDG5 more equitably will require political, social, legal and economic actions as well as scaling up technical strategies; and that traditional public health and health systems approaches must therefore be combined with a human rights-based approach. Maternal health as a human rights issue is emphasised: the right to life and survival; the right to the highest attainable standard of health; the right to decide freely the number and spacing of one's children; and the Convention for the Elimination of Discrimination against Women (CEDAW) (DFID 2005:2). The Department of Health (South Africa 2011:12) indicates that the government of South Africa acknowledges human rights approach regarding sexuality and reproduction. The policy and legislation of South Africa promotes and upholds that reproductive health requires that a person is able to reproduce and has the freedom to decide if, when and how often to do so. This implies that all people have the right to be informed about reproduction. People have the right of access to contraception that is safe, effective, affordable, and acceptable and of their choice, including safe termination of pregnancy. All people have the right to health care services that will enable women to safely go through pregnancy and childbirth and will give couples the best chance of having a healthy baby (South Africa 2011:12).

World Bank (2009:7-8) and Liu, Yang and Wang (2010:1) acknowledge that epidemiologically, the nature of maternal deaths is complex. It does not only concern the health sector although being a key factor; but is also affected by other sectors for example, nutrition, education, social justice, women's empowerment, labour/employment and others. Data overwhelmingly show, for example, that anaemic women are more likely to have poor maternal outcomes; hence, nutrition is an important related sector. It further indicated that educated women are more likely to access antenatal care and other health services and therefore have better health outcomes; hence, female education is an important related sector. It is also stipulated that working women have fewer children and lower mortality rates for a variety of reasons; hence, female

workforce participation is an important related sector (World Bank 2009:7; Jat et al 2011:4-8).

Meda, Houton, De Bouwer, Sombie and Byass (2008:69-70) and Knight et al (2013:1) indicate that life-threatening situations may develop rapidly and without warning, often in previously uncomplicated pregnancies. It is because of the unpredictable nature of childbirth that (EmOC) has been called the 'keystone in the arch of safe motherhood'. When patients need to be referred, response time, availability of transport (ambulance on site) as well as the presence of a skilled registered midwife, often determines the outcome for the patient. Challenges in this respect includes poor response to emergency situations, attendance by unskilled birth attendants and doctors, and long distances to the referral hospital via rural roads which are often in a poor state. A study conducted by Beaves, Jenkins and Wallace (2007:94-96) indicated that adequate training of health professionals plays an important role in the reduction of adverse events in maternity units. Intra-partum maternal and fetal surveillance practices also play a role in the avoidance of adverse events as found in smaller rural district hospitals in Victoria Province in Australia and in the UK revealed Beaves et al (2007:96-97).

Since most maternal deaths occur during delivery and the postpartum period, EmOC, skilled birth attendants, postpartum care, and transportation to medical facilities if complications arise are all necessary components of strategies to reduce maternal mortality (World Bank 2009:15). Post-abortion care, better reproductive health services for adolescents, and improved family planning care are important ingredients in maternal mortality reduction. New developments in malaria, nutrition, violence and HIV/AIDS in relation to maternal health are highlighted, as well as measurement issues (World Bank 2009:15-20).

The historical evidence afforded for maternal mortality reduction is contextual and the determinants of maternal mortality are complex and vary from place to place. Furthermore, the data provide no evidence of cause and effect. Some strategies are too expensive for some countries. The solution remains elusive and further research is needed to assess the effectiveness of strategies currently being employed in low income countries and address all the circumstances around maternal deaths as suggested by Bullough, Meda, Krystyna, Makowiecka, Ronsmans, Chadi and Hussein

(2005:1180) and Chapman, Reveiza, Sangalang, Manu, Bonfill, Munoz and Abalos (2014:314-315).

1.3 RESEARCH PROBLEM

The continuing high maternal mortality in low resource countries (including South Africa) is evidence that there is a need to identify and evaluate strategies that are most effective in reducing maternal mortality (Bullough et al 2005:1180; Chapman et al 2014:314-315). The Fezile Dabi District in the Free State Province has been identified as the District with poor performance on the achievement of maternal and child health targets and Millennium Development Goals 4 and 5 (UNO 2008; South Africa 2014:31). The Maternal and Child Health Programme is one of the priority programmes within the Free State Province and the District. The Province, however, is challenged by increasing number of maternal deaths; having facility maternal mortality rate of 288 per 100 000 live births, a shortage of health professionals and under-resourced emergency medical services (South Africa 2014:12, 30; South Africa 2010:71, 72). The District's facility maternal mortality rate was 125 per 100 000 live births for 2012/2013 (South Africa 2014:30). The targeted progress is 100 per 100 000 live births or less (South Africa 2014:30). Although the district is faced with a high number of maternal mortality, no known formal research has been conducted to evaluate strategies currently implemented to reduce maternal mortality.

1.4 AIM OF THE STUDY

1.4.1 Research purpose

To explore, describe and evaluate the strategies used to reduce maternal mortality in the maternity units of the Fezile Dabi District.

1.4.2 Research objectives

The research objectives were to

- explore, determine and evaluate the strategies used to reduce maternal mortality of the Fezile Dabi District

- establish whether the strategies implemented are those that are appropriate as per the essential package outlined in the MNPI tool

1.5 SIGNIFICANCE OF THE STUDY

The outcome of the study will assist the researcher to make recommendations to the district and hospital managers about all identified gaps or challenges in the implementation of the maternal health programme within the district.

The research hopes the following stakeholders will benefit from the study:

- Strategic Management team of the Fezile Dabi District and three hospitals – may use the results of the study as empirical evidence of the actual findings and implement strategies that will further reduce the maternal mortality rate.
- Provincial Department of Health – the results will be province specific and may be used as a benchmark for other regional or district hospital.
- Most of the studies done to evaluate strategies for reducing maternal mortality are between countries or country-based not hospital-based.
- The researcher will be empowered in the research process and acquire research skills.

The patients might benefit from possible re-development public health policy, improved health provision systems programme planning and strengthening of public health systems.

1.6 OPERATIONAL DEFINITIONS

These are the conceptual definitions:

- **Strategies** are a set of plans and courses of action, which together result in the achievement of a goal such as reduction of maternal mortality. Therefore the term strategies refer to high level, complex public health goals that underpin programmatic and policy level initiatives. Single clinical interventions do not count as strategies but are likely to be an integral part of strategies implemented at health care facilities. Thus, comprehensive EmOC is a strategy, while carrying

out a caesarean section or giving blood transfusion are specific clinical interventions (Bullough et al 2005:1180).

- **A clinical strategy** is the strategic direction for range of clinical intervention to be provided to meet the existing and future needs of the patients (Burchett & Mayhew 2008:81).
- **A non-clinical strategy** is the strategic direction for range of general supporting functions (hospital protocols, training, education, monitoring and evaluation) to be provided to meet the existing and future needs of the patients (Burchett & Mayhew 2009:81).
- **Maternal mortality.** The WHO (2014:14) defines maternal death as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
- **Maternal health care** refers to the health of women during pregnancy, childbirth and the postpartum period, encompassing healthcare dimensions of family planning, preconception and prenatal care in order to reduce maternal morbidity and mortality. Preconception care includes health education, screening among women of reproductive age to reduce risk factors that might affect future pregnancies (*Wikipedia. The Free Encyclopedia* [Sa]).
- **Evaluation** is a systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards. It can assist an organisation to ascertain the degree of achievement or value in regard to the aim and objectives of an undertaken project. The primary purpose of evaluation, in addition to gaining insight into prior or existing initiatives, is to enable reflection and assist in the identification of future change (*Wikipedia. The Free Encyclopedia* [Sa]).

1.7 THEORETICAL FOUNDATIONS OF THE STUDY

1.7.1 Research paradigm

This study adopted a quantitative paradigm. The study design was a descriptive cross-sectional approach. The study complied with all the characteristics of quantitative research in so that the results were valid and reliable.

1.7.2 Theoretical framework

This study is based on conceptual framework of Initiative for maternal mortality programme assessment (IMMPACT). IMMPACT is a global research initiative for evaluation of safe motherhood intervention strategies in developing countries. Its purpose is to improve policy and program decision-making to reduce maternal mortality based on robust evaluation and measurement. Its objectives are closely linked with global efforts to meet the UN Millennium Development Goals for 2015, especially those related to maternal mortality reduction.

1.8 RESEARCH DESIGN AND METHOD

A quantitative descriptive cross-sectional design was used in this study as described by Joubert and Erlich (2007:77-88). A quantitative descriptive study took the form of a survey, to evaluate the strategies for maternal mortality reduction. A descriptive study is limited to the description of the problem, which is the reduction of maternal mortality in the context of this study.

1.9 SCOPE OF THE STUDY

The scope of this study focused on the area with a high prevalence of maternal mortality. The level of representativeness is questionable in non-random sampling and inferences can consequently not be made about the study population.

1.10 CONCLUSION

The chapter presented the orientation of the study. It outlined on the background information about the research problem, the research problem, the aim and significance of the study, definition of terms, theoretical foundations of the study, research design and method and the scope of the study.

The next chapter outlines the literature reviewed on background to maternal mortality, the causes, associated factors and the challenges experienced over the past with strategies implemented to help decrease maternal mortality.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter outlines the literature reviewed on the causes of maternal mortality, associated factors and the challenges experienced over the past with strategies implemented to help decrease maternal mortality. It also addresses the progress achieved so far in different countries in relation to the MDGs that were endorsed in 2000 by the 192 UN member states and many other international organisations. South Africa's recent estimates of recent maternal mortality rate, the "big 5" causes of maternal deaths are explained and maternal mortality rate target according to MDGs is indicated.

The clinical strategies used to reduce maternal mortality are outlined and explained from the literature reviewed and the challenges associated with them. The clinical strategies includes: ANC, obstetric care, postnatal care, family planning, information, education and communication; training arrangements, research, monitoring and evaluation and hospital protocols.

2.2 MATERNAL MORTALITY

Pregnancy and childbirth is a significant period in the lives of women and their relatives. However, pregnancy and childbirth is a potentially risky and a possible fatal experience for millions of women in developing countries. This is in spite of evidence which shows that motherhood can be safer for all women by following a set of life-saving strategies that can work even in poor resource settings (Adewemimo, Msuya, Olaniyan & Adagoke 2014:7). The WHO (2014:1) states there were an estimated 289 000 maternal deaths globally in 2013, a decline of 45% from 1990. The sub-Saharan Africa region alone accounted for 62% (179 000) of global deaths followed by Southern Asia at 24% (69 000). At the country level, the two countries that accounted for one third of all global maternal deaths are India at 17% (50 000) and Nigeria at 14% (40 000). The global Maternal Mortality Rate (MMR) in 2013 was 210 maternal deaths per 100 000 live

births, down from 380 maternal deaths per 100 000 live births in 1990. The MMR in developing regions (230) was 14 times higher than in developed regions (16). Sub-Saharan Africa has the highest regional MMR (510).

Sandin-Bojo, Hashimoto, Kanai and Sugiura (2012:880) state that millions of these women suffer from pregnancy-related illnesses and near-miss events (severe, life threatening complications). Most of these deaths occur around the time of child birth and are related to the fact that women have no or limited access to health care, or because the quality of health care is poor. Mortality rates have been found to be higher in rural than urban population. Hirose, Borchert, Niksear, Alkozai, Cox, Gardiner, Osmani and Filippi (2011:1003) and Sandin-Bojo et al (2012:880) indicate that safe motherhood community has adopted framework and is frequently quoted by public health professionals despite its restricted focus on emergency curative services as opposed to primary and secondary prevention. The framework distinguishes three time periods that identifies barriers to EmOC. The first barrier: (1) from the onset of complications to a decision to seek care. Secondly: (2) from decision to reaching the appropriate health facility. Thirdly: (3) from arrival in facility to treatment. Factors prolonging the first period are complex and often context-specific. This includes a woman's status in her family and community, income constraints, perceived high costs of services or poor quality of care, traditional beliefs, and low awareness of danger signs and symptoms of severe complications. The second period is often prolonged by travel distance and lack of facilities and transportation means. The third period relates to the quality of health care services.

Sandin-Bojo et al (2012:880) and (WHO 2014:15) state that the main reasons for maternal mortality are haemorrhage, hypertensive disorders, prolonged or obstructed labour, infections, obstetric complications, particularly during labour and indirect causes such as HIV and malaria. Hulton, Matthews and Stones (2007:2083) state that policy emphasis on increasing the rate of childbirth in hospitals inherently assumes that institutions provide an optimal level of care. Hulton et al (2007:2083) and Odhiambo (2011:7) indicate that recent evidence, however, suggests that women receive and experience appalling care in some institutions in developing countries. Hulton et al (2007:2083) indicate that there is growing evidence that avoidable factors, missed opportunities and substandard care contribute to maternal deaths. In a study done by (Hulton et al 2007:2090) in urban India, other contributory factors of sub-optimal

provision of human and physical resources were identified. This included: evidence of caesarean sections being performed at institutions that are not properly equipped to perform lifesaving operations; anaesthetists who were difficult to contact at certain times of the day and surgical operations being performed with no blood bank on site. These indicate the type of 'delays' that could prevent users receiving timely and appropriate care in the event of an emergency (Hulton et al 2007:2090).

A study conducted by Hulton et al (2007:2090) and another systematic review by Knight et al (2013:3) reveal that blood would reportedly have to be bought by relatives from private blood banks which are open 24 hours a day for relatively large sums of money in relation to average household. Furthermore, the shortage of essential drugs was also identified. In addition, while all the private facilities were equipped with operating theatres, there were usually no blood banks on site or reasonably close, nor full time anaesthetic cover. There were occasions where women in labour were attended by unskilled women who help with the general maintenance of the ward (cleaning and cooking) (Hulton et al 2007:2090; Knight et al 2013:3).

Wise and Clark (2010:353) and Sandin-Bojo et al (2012:880) state that the burden of maternal mortality and morbidity falls most heavily on the poorest countries in the world where concurrent disease (e.g., tuberculosis and HIV), chronic anaemia and malnutrition takes their toll on maternal health. In developing regions, Eastern Asia had the lowest level of 37 deaths per 100 000 live births. Sub-Saharan Africa also had the largest proportion of maternal deaths attributed to HIV at 10 percent, with the Caribbean sub-region close behind at 6 per cent. Of the 19,000 worldwide deaths formally referred to as "AIDS-related indirect maternal deaths", 17 000 (91 percent) were in sub-Saharan Africa as indicated in the WHO (2014:12).

The WHO (2014:12) further indicates that Sub-Saharan Africa accounted for 6 800 (91%) of the estimated 7500 maternal deaths attributed to AIDS worldwide. The proportion of maternal deaths attributed to AIDS in sub-Saharan Africa was 3.8%, yielding an AIDS attributed MMR for sub-Saharan Africa of 19 maternal deaths per 100 000 live births. Although the MDG regional aggregated proportions of maternal deaths attributed to AIDS were relatively small, they were substantial for countries with high HIV prevalence. Thirteen countries had a proportion of maternal deaths attributed to AIDS of 10% or more. The WHO (2014:34) indicates that eight countries had a

proportion of maternal deaths attributed to HIV of 10% or more: South Africa (41.4%); Botswana (23.5%); Swaziland (18.6%); Zambia (15.4%); Lesotho (14.8%); Namibia (13.9%); Mozambique (13%); Gabon (10.4%).

The WHO (2014:36-37) indicates that the 19 countries that had achieved MDG 5 by 2013 are: Belarus (96% reduction in MMR); Maldives (93%); Bhutan (87%); Cambodia (86%); Israel (84%); Equatorial Guinea (81%); Poland (81%); Lao People's Democratic Republic (80%); Romania (80%); Bulgaria (78%); Estonia (78%); Timor-Leste (78%); Eritrea (77%); Cabo Verde (77%); Latvia (77%); Oman (77%); Lebanon (76%); Nepal (76%) and Rwanda (76%). Among these, 11 had a baseline of MMR \geq 100 in 1990 and are indicated as 'on track' to achieve MDG 5. The 11 countries categorized as 'on track' are: Maldives (93%); Bhutan (87%); Cambodia (86%); Equatorial Guinea (81%); Lao People's Democratic Republic (80%); Romania (80%); Timor-Leste (78%); Cabo Verde (77%); Eritrea (77%); Nepal (76%); Rwanda (76%). A further 63 countries are characterized as 'making progress', while 13 countries have made 'insufficient progress' (WHO 2014:12).

Over the past decade there has been increased awareness of and a global commitment to address the issues of the tragedy of maternal, neonatal and infant morbidity and mortality. In monitoring progress towards the MDGs, it has become evident that indicators of maternal and neonatal mortality have seen little improvement in low-income countries and some middle-income countries (Fort 2012:81). Adewemimo et al (2014:7) state that about 99% of these deaths occur in developing countries where the lifetime risk of women dying due to pregnancy-related complications is 250-fold higher than that in industrialised regions. Over 30 million women suffer long-lasting injury or illness from pregnancy-related causes and complications and many more suffer from related mental morbidity in developing countries.

The most recent estimates of 269 maternal deaths per 100 000 live births for 2010 suggest that South Africa is still lagging behind in meeting the MDG target of reducing the MMR to 38 maternal deaths per 100 000 live births by 2015 (South Africa 2013:76). According to SA Saving Mothers 2008-2010 (South Africa 2010:3-4), the "big 5" causes of maternal death in South Africa are NPRI (40.5%, mainly deaths due to HIV infection complicated by tuberculosis and pneumonia), obstetric haemorrhage (14.1%), complications of hypertension in pregnancy (14.0%), pregnancy related sepsis (9.1%,

including septic miscarriage and puerperal sepsis) and medical and surgical disorders (8.8%). These five account for 86.5% of maternal deaths. Almost 4 out of 5 women who died in pregnancy, childbirth or during puerperium were tested for HIV infection throughout South Africa. Of those tested, 70% were HIV infected.

Two thirds of the women with AIDS had respiratory complications namely tuberculosis (TB) (26.9%), pneumocystis carinii pneumonia (13.3%) and other non-specified pneumonia (26.7%). The second largest group of underlying cause in women with AIDS was meningitis (12.9%). The majority of emergency events, i.e. diagnosis of HIV infection occurred in the antenatal period (52%), whereas the majority of women (61%) died postnatally. Complications of antiretroviral therapy, although relatively rare, doubled in 2010 compared to 2008 and 2009. Anaemia was a common contributory condition; 42.9% of women who died and the haemoglobin were measured were anaemic (South Africa 2010:3-4).

Obstetric haemorrhage continues to be the most common avoidable cause of maternal death. Bleeding during and after caesarean section is the largest category and accounts for 26.2% of deaths due to obstetric haemorrhage. The largest number of deaths due to bleeding associated with caesarean section occurred at district hospitals but the numbers at regional and tertiary hospitals were also of concern. Resuscitation was sub-optimal in 22.3% of cases where it was attempted and the cases had sufficient information to assess (South Africa 2010:3-4).

Wise and Clark (2010:354) argue that change is possible. Less than a hundred years ago, the risk of dying because of pregnancy or childbirth in the UK was 1:290. Today it stands at 1:19 000. These are the results of the successful treatment of puerperal sepsis, the availability of blood transfusion, improved surgical and anaesthetic techniques and universal access to care. While universal access to an integrated health-care system remains perhaps an unrealistic aim, every mother-to-be deserves an attendant with the knowledge, skills and critical judgement to actively manage her labour, supported by appropriate supplies, equipment and EmOC as advocated by Wise and Clark (2010:354).

2.3 STRATEGIES FOR THE REDUCTION OF MATERNAL MORTALITY

2.3.1 Clinical strategies

2.3.1.1 Antenatal care

ANC remains one of the Safe Motherhood interventions that if properly implemented has the potential to significantly reduce maternal and perinatal mortality. The antenatal period presents opportunities for reaching pregnant women with interventions to maximize maternal and neonatal wellbeing. Regular ANC visits provide health personnel with an opportunity to manage the pregnancy. It is a period during which a variety of services such as treatment of pregnancy-induced hypertension, tetanus immunisation, prophylaxis and micronutrient supplementation are provided. These measures have been shown to be effective in improving pregnancy and neonatal outcomes as indicated by Asundep, Carson, Turpin, Tameru, Agidi, Zhang and Jolly (2013:280) and Chauhan (2012:617). Asundep et al (2013:280-281) suggest that educating women on the dangers of inadequate antenatal care utilisation may be the best way to encourage antenatal care use. Antenatal care utilisation is associated with adverse pregnancy outcomes (defined as low birth weight, stillbirth, preterm delivery or small for gestational age). A 44.6% prevalence of adverse pregnancy outcome has been reported among pregnant women in Kumasi, Ghana. This high prevalence could be a result of barriers associated with accessing antenatal care services (Asundep et al 2013:280).

Asundep et al (2013:280) further indicate that while ANC in developed countries is characterized by a high number of antenatal visits and early attendance, it is the opposite in developing countries with fewer, late or no antenatal visits. A study on the analysis of equity in maternal health care in South Africa conducted by Wabiri, Chersich, Zuma, Blaauw, Goudge and Dwane (2013:1) reveal that poorest women had nearly universal antenatal care coverage, but only 39.6% attended before 20 weeks gestation; this figure was 2.7-fold higher in the wealthiest quartile (95% CI adjusted odds ratio = 1.2–6.1). Women in rural formal areas had lowest antenatal care coverage (89.7%), percentage completing four antenatal care visits (79.7%) and only 84.0% were offered HIV testing. Free State Department of Health (South Africa 2014:83) also indicated poor attendance of antenatal visits before 20 weeks. A study in Kenya

indicated that 52.5% of women in rural areas and 49.2% in urban settings attended antenatal care once prior to delivery and the first antenatal care visit was after 28 weeks of pregnancy. In Ghana 85% attended at least one antenatal visit with a skilled provider before delivery. Seventy-three percent of pregnant women in urban areas and 55% in rural areas were more likely to attend four or more antenatal visits. Though it has been reported that up to 40% of pregnant women in developing countries receive no ANC, a study in Ghana reported that 14% of women did not attend antenatal care at all (Asundep et al 2013:280).

Sergurado and Paiva (2007:28) state that the links between antenatal care and HIV prevention and care should start from women's own perspectives and the local context. Most pregnant women who seek antenatal care worldwide are not aware of their HIV sero-status. Department of Health, Fezile Dabi District Health Plan 2014/2015 (South Africa 2014:83) reveal poor antenatal client HIV re-test rate. Sergurado and Paiva (2007:28) state that antenatal care is the port of entry to the health care system for the majority of women of reproductive age. Antenatal care may be available variously through community and home-based care, primary care units, Non-government Organisation (NGO) services, faith-based facilities, private clinics, public maternity clinics or hospitals. Asundep et al (2013:280) and Sergurado and Paiva (2007:28) indicate that different factors influence the health care seeking behaviour of pregnant women. These factors could be organisational, such as the availability of services, or socio-demographics. Socio-demographic characteristics, such as education, occupation and number of children, were related to the use of antenatal care services in Vietnam. In Punjab, Pakistan, family finances and the woman's level of education were important determinants of antenatal care use. In Nigeria, perceived quality of care was one of the factors responsible for the low utilisation rate of antenatal care services in tertiary institutions in the Southwest part of the country. The reasons why some women in sub-Saharan countries including Ghana do not seek or get adequate antenatal care are not obvious. In order to improve the planning and provision of antenatal care services, it is important to understand perceived or apparent barriers to antenatal care services. This will enable the formulation and implementation of interventions that will sustain antenatal care utilisation (Asundep et al 2013:280).

A study conducted by (Asundep et al 2013:284) indicate that cost, parity and distance influence antenatal care attendance and are also associated with adverse pregnancy

outcomes. This study did not investigate the cost associated with antenatal care attendance. However, cost may be related to travel and unofficial fees. Cost could also be due to feeding expenses for the pregnant woman and more so if she was accompanied by a family member. Buying drugs and supplies that were not provided or not covered by the National Health Insurance System (NHIS) could also constitute cost. Cost was also cited as an obstacle to enrolling women in the NHIS. To avoid the long wait time in public facilities, some of these women may have ended up in private or maternal home facilities. The fees charged could be high and may determine how many times a woman attends antenatal care (Asundep et al 2013:284-285).

In low income countries, where morbidity and mortality burdens are greatest, nearly all antenatal care is delivered by midwives. Therefore, midwives offering antenatal care can make a major contribution toward achieving the MDGs. This is especially true in sub-Saharan Africa where half of all child and maternal deaths and 75% of mother-to-child HIV transmission infections occurs (Patil, Abrams, Klima, Kaponda, Leshabari, Vonderheid, Kamanga & Norr 2013:1191).

2.3.1.2 Obstetric care and intra-partum care

Darmstadt, Lee, Cousens, Sibley, Bhutta, Donnay, Osrin, Bang, Kumar, Wall, Baqui and Lawn (2009:91) and Adewemimo et al (2014:8) describe skilled birth attendants according to WHO as “medically qualified providers with midwifery skills (midwife, nurse or doctor) who have been trained to manage normal deliveries and diagnose, manage, or refer obstetric complications, ideally who live in, and are part of, the community they serve. They must be able to manage normal labour and delivery, perform essential interventions, start treatment and supervise the referral of mother and baby for interventions that are beyond their competence or not possible in a particular setting . The core skills of the SBA include monitoring the progress of labour, augmenting labour, conducting normal deliveries, actively managing the third stage of labour and the resuscitation of the newborn (Darmstadt et al 2009:91).

Furthermore, WHO recommends that in remote areas with poor access to a health facility with capacity for surgical intervention, the SBA should be able to perform vacuum or forceps extraction, vacuum aspiration for incomplete abortion, and symphysiotomy for obstructed labour. The context of skilled birth attendance goes

beyond the presence of health professional but also includes the availability of enabling environment, which includes medication, supplies and equipment cited in Adewemimo et al (2014:8) and Darmstadt et al (2009:91).

Studies have shown a correlation between having skilled care during childbirth and declining maternal mortality. Countries like Sweden, Norway, the Netherlands and Denmark achieved remarkably low maternal mortality very quickly due to increase in SBA coverage (Adewemimo et al 2014:8). In Egypt, 50% reduction in MMR was observed from 1983 to 2000 following doubling of the proportion of childbirth by skilled personnel and ensuring availability of the enabling environment. Hulton et al (2007:2091) state that evidence indicated that many healthcare referral systems in developing countries are failing to optimise women's rapid access to EmOC. As major direct obstetric complications are time-critical, any delay in accessing high quality appropriate care can prove fatal. Many hospital studies of maternal mortality show that 10% or more of deaths occur within the first hour of arrival and another 30-50% within 24 hours indicating the role that late or lack of referral to essential obstetric care can play (Adewemimo et al 2014:8).

Wise et al (2010:353) mention that the presence of an attendant at every birth and access to EmOC are key to reducing maternal morbidity and mortality in the developing world. However, resource- rich countries have a rising caesarean section rate with its consequential effect on the incidence of abnormal placentation and its link with peri-partum hysterectomy. Kakyo, Muliira, Mbalinda, Kizza and Muliira (2012:379) emphasise that the key concern is the midwives' ability to accurately screen the mother in a timely manner to ensure timely referral for care. In a study done by Harris, Teijlingen, Hundley, Farmer, Bryers, Caldwell, Ireland, Kiger and Tucker (2011:302) in rural Scotland indicate that the geographical context influences the provision of maternity care. In a study conducted by (Kakyo et al 2012:379) in the rural district of Uganda the results reveal an opportunity and challenge for midwives working in rural settings of developing countries like Uganda.

2.3.1.3 Post-partum care

Fort (2012:81) states that post-partum and post-natal care are key components of the "continuum of care" for women and babies. The continuum starts when a girl receives

information and services during adolescence, continues throughout pregnancy, childbirth, the post-partum-period and thereafter, and includes newborn, infant and child health care as well. Post-partum care for women could not only prevent 60% of maternal deaths but also the acute and chronic morbidity arising from pregnancy and delivery-related complications. Post-natal care is an important opportunity to support exclusive breastfeeding, immunisation, family planning and prevention of HIV infection indicated (Fort 2012:81).

Fort (2012:89) further indicates that there are several guidance documents that describe the elements of care for post-partum women and newborns, either with summary information only or intended mostly for intermediate level and home care, e.g. the WHO packages of interventions. The United Kingdom (UK) National Institute for Health and Clinical Excellence (NICE) clinical guideline goes beyond critical danger signs such as haemorrhage, sepsis and tears. It highlights into aspects of morbidity such as urinary/faecal incontinence, dyspareunia, breast engorgement and backache in women. The guideline further addresses checking baby's thriving, attachment, safety, sleep pattern, and ailments such as thrush, rashes, diarrhoea and constipation. A newer publication on key interventions for reproductive, maternal, newborn and child health includes treatment for small and ill babies (Fort 2012:89).

Fenwick, Bhutt, Dhaliwal, Hauck and Schmied (2010:11) indicate that a large and important part of maternity service provision is the care delivered by midwives to women and their families in the immediate postpartum period. Fenwick et al (2010:11) advocate that, historically, the importance of providing quality services during the early postpartum period has gone unrecognised, been under resourced and rated as a low priority with respect to other aspects of maternity care. This has contributed to a situation where the needs of postnatal women have remained relatively invisible. As a result, current postnatal care often fails to address women's postpartum health needs, leaves many feeling dissatisfied with their maternity care, and potentially puts women at risk of suffering long term chronic health problems (Fenwick et al 2010:11).

Sergurado and Paiva (2007:35) indicate that many women experience violence during-pregnancy, with harmful consequences both for themselves and their babies, such as spontaneous abortion, pre-term labour and low birth weight. Health care workers must be aware of this and seek to ensure that women receive the counselling, care and

referrals they may require to mitigate the risk of intimate partner violence. Fenwick et al (2010:11) emphasise that emotional care has also been identified as an essential component of quality postnatal care. An Australian study undertaken in Queensland, with a large representative sample identified lack of emotional care by midwives (Fenwick et al 2010:11). Another study that surveyed maternity units in Victoria, Australia, found that the psychosocial health of women was inconsistently assessed and argue that midwives need further skill development in providing psychosocial care (Fenwick et al 2010:11).

Fenwick et al (2010:20) further advocate for policy and leadership direction in this clinical area. The development and implementation of strategies and/or new models of care that value sensitive and relational interactions between women and their care providers within the framework of primary health care, is the way forward. Furthermore, Fenwick et al suggested that evaluation should take into account the physical and emotional long-term health outcomes of both women and their infants.

Kakyo et al (2012:379) suggest that midwives should now emphasise good assessment and male involvement in postpartum care to increase the chances of implementing interventions targeting men when caring for women with postpartum depressive symptoms. Postpartum depression is a severe medical condition that could occur in the first months after birth. Without assistance and counselling, the postpartum depression may have a prolonged development and cause disabilities. Postpartum depression can occur after miscarriage, stillbirth or birth with adoption. In rare cases, a woman with postpartum depression may develop psychotic symptoms that may endanger the child and others (postpartum psychosis) (Enache 2013:267). The findings of the study conducted by Kakyo et al (2012:379) in a rural district of Uganda show that men must be involved in order to ensure holistic management of postpartum depressive symptoms.

2.3.1.4 Family planning

Family planning refers to the use of the methods of birth control (contraception) counselling in case of infertility, supporting the couples that want to have children, sexual education and counselling in case of abortion (Enache 2013:264).

Ahmed, Li, Liu and Tsui (2012:111) state that contraceptive use averts almost 230 million births every year, and family planning is the primary strategy for prevention of unwanted pregnancies. Ahmed et al (2012:111-112) indicate that family planning directly reduces the number of maternal deaths. It reduces the chance of pregnancy and the associated complications (exposure reduction), lowers the risk of having an unsafe abortion (vulnerability reduction), delays first pregnancy in young women who might have premature pelvic development. Lastly, it reduces hazards of frailty from high parity and closely spaced pregnancies. In study done by (Rahmani, Wade & Riley 2013:1) reveal that increasing contraceptive prevalence rates in Afghanistan from 10% to 60% over the course of 5 years could prevent 11 653 maternal deaths and 317 084 infant deaths, a total of 328 737 maternal and infant deaths averted.

Ahmed et al (2012:111) state that each year, nearly 50 million of the 190 million women who become pregnant undergo abortions to terminate unwanted pregnancies and about 13% of maternal deaths are caused by complications of abortion. Dalton, Xu, Mullan, Danso, Kwawukume, Gyan and Johnson (2013:42) and Ferreira, Souza, Lima and Braga (2010:2) state that efforts intended to decrease maternal deaths need to recognize and address unsafe abortions as a significant contributor to the high rates of maternal mortality found in developing countries. Abortion-related complications are a leading cause of maternal mortality, resulting in 15-30% of maternal deaths in some studies. To address the issue of unsafe abortions, the International Family Planning Fellowship Program (IFPFP) in advanced training in abortion and family planning was established in Ghana in 2008. The findings of a study conducted by Goldie, Sweet, Carvalho, Natchu and Hu (2010:1) and Ahmed et al (2012:124) reveal that early intensive efforts to improve family planning and provide safe abortion, accompanied by a systematic stepwise effort to scale up intra-partum and EmOC, could reduce maternal mortality by 75%. Goldie et al (2012:5) indicate that an effective family planning reduced the unmet need (for spacing and limiting births) by amounts ranging from 25% to 100%, reduced maternal deaths by amounts ranging from 7.0% to 28.1% in rural India and 5.8% to 23.5% in urban India. Goldie et al (2012:5) further state that increased family planning to reduce the unmet need also reduced the number of deaths attributable to unsafe abortion. For example, in rural India increasing contraceptive rates to 67.6%, cut abortion-related deaths by more than 50% even with no change in rates of unsafe abortion. Improved access to safe abortion and post-abortion care for three out of four women pursuing elective termination of pregnancy prevented an additional 22% to 50%

of abortion-related deaths, depending on the underlying level of unmet need (Goldie et al 2010:5).

Ferreira et al (2010:2) and Ramkissoon, Searle, Burns and Beksinska (2010:44) state that providing post-abortion family planning services should include structured contraceptive counselling with free and easy access to all kinds of contraceptive methods can be suitable. Some methods that are technically available are poorly utilised due to lack of promotion. Ramkissoon et al (2010:35) indicate that the uptake of intra-uterine devices (IUD) has fallen and almost negligible. Ramkissoon et al (2010:36) further indicate that lack of access to emergency contraception (EC) is a human right issue. Health care workers are key in promoting a range of methods to clients and choice of method is an essential component of a client's right to choose. A study conducted by (Ferreira et al 2010:4) reveal that despite the availability and provision of all contraceptive methods, only four methods were accepted by women. The most popular methods were oral contraceptives and injectables, followed by condom and IUD. A high acceptance of injectables may be due to a more fool-proof method and is likely to be easier to use. The most known methods were also the most chosen ones with the exception of the IUD, despite being the fourth most known method (92.6%) it was chosen by only one woman (Ferreira et al 2010:4). Ramkissoon et al (2010:36-37) reveal that health care providers have concerns that EC use will be abused or EC is an abortifacient, resulting in an unwillingness to prescribe or promote it. Ramkissoon et al (2010:36) argues that this is based on misperception as EC is not abortifacient but prevents pregnancy from occurring. Ferreira et al (2010:2) advocate that contraceptive counselling could result in an increase in method compliance as well as encouragement and providing emotional support for women to feel more secure and satisfied with the service and motivate the use of family planning methods. However, Ferreira et al (2010:2) argue that despite the evidences on the effectiveness of family planning services to increase the acceptability of contraceptive methods of women who had recently had an abortion; contraceptive counselling remains one of the least inquired components in post-abortion care programme. Ramkissoon et al (2010:36) advocate for better counselling, extended clinic hours and improving access to communities.

Ramkissoon et al (2010:41) further indicate that involving South African men in sexual and reproductive health (SRH) is important in their own right, and also to protect women's SRH rights. Currently there is disproportionate distribution of sexual

reproductive health responsibilities between South African men and women, including decisions about contraception. Although there is much literature calling for the need for male programmes to be put in place in South Africa, there is little in the way of programmes and policies that have specific guidelines for male sexual reproductive health services (Ramkissoo et al 2010:40). Sergurado and Paiva (2007:28) add that men have their own unmet reproductive and sexual needs; men's access to and involvement in provision of these services thus need to be addressed and may help decrease gender inequality and facilitate HIV prevention.

2.3.1.5 Information, education and communication

Pagel, Lewycka, Colbourn, Mwansambo, Meguid, Chiudzu, Utlej and Costello (2009:1441) indicate that community-based prevention and treatment of maternal illness could be used to complement a health-facility strategy. Provision of life-saving drugs to prevent post-partum haemorrhage or treat sepsis after delivery might be possible via antenatal clinics, community health workers or even female volunteers in villages. Community-level interventions can reduce maternal mortality. The community interventions explored should be seen as part of an integrated programme for health-system strengthening in which health facilities manage the provision of community health care (Pagel et al 2009:1441). A study conducted by Liu, Yang and Wang (2010:1) in rural western China, ten countries that implemented comprehensive community-based intervention were used as intervention groups, while 22 countries were used as control groups. Liu et al (2010:3) indicate that community-based intervention had increased prenatal visits rate by 5.2%, first prenatal visit in first trimester rate by 12.0% and hospital delivery rate by 22.5% respectively. The community-based health education effectively changed the wrong ideas about health and traditional customs predominance in rural women.

Bhutta, Ali, Cousens, Ali, Haider, Rizvi, Okong, Bhutta and Black (2008:972) advocate for community mobilisation through support groups. Community support groups with the aim of providing health messages and support for care, seeking linkages with the health system. Bhutta et al (2008:975) state that the overall effect of community support groups on maternal neonatal child health (MNCH)-related behaviours and newborn mortality seems positive; comparable trends are also evident in the reduction of perinatal mortality. Nineteen of twenty studies in the systematic review by (Bhutta et al

2008:975) conclude that mass media was effective; the direction of effect was also consistent across studies towards the expected change. Ramkissoon et al (2010:38) indicate that community interventions should be carefully monitored in view of their considerable costs.

Islam and Thorvaldsen (2012:15), Asundep et al (2013:285) and South Africa (2011:22) also advocate for radio and television stations that broadcast health programs that includes the frequency of broadcast of antenatal health education programmes could likely increase the uptake of antenatal care services. Asundep et al (2013:285) state that exposure to mass media was seen to increase the odds of women seeking antenatal care in India, while less exposure to mass media was associated with underutilisation of antenatal care services in Indonesia.

Darmstadt et al (2009:91) advocate for the using of community health care workers (CHWs) to promote birth preparedness and care-seeking. CHWs are defined by WHO as “members of the communities where they work, selected by the communities, answerable to the communities for their activities, supported by the health system but not necessarily a part of its organisation, and have shorter training than professional workers . CHWs may play a critical role in health care delivery in rural, under-resourced regions and have proven to be effective in promoting childhood immunisation and the management of acute respiratory infections and malaria. CHWs may play an instrumental role in the primary prevention of intra-partum-related injury by educating women and families about birth preparedness and mobilising communities to seek skilled care during childbirth. In Sylhet and 10 additional districts in Bangladesh, CHWs were trained in interventions targeting birth preparedness and essential newborn care. After the intervention, women’s knowledge of danger signs in pregnancy, labour and delivery and the postnatal period significantly increased. Immediate newborn care practices, including immediately drying, warming, and stimulating the infant also improved. Furthermore, in Mirzapur District, there were some improvements in care seeking for newborn illness after CHW training, with reference to both self- referrals and increased compliance with CHW referral. In Kebemer, Senegal, CHW training was associated with significant increases in women who identified their place of delivery with a qualified provider and who had identified emergency funds or transport. Pregnant women were three-times more likely to recognise at least four danger signs during labour and delivery. Furthermore, the facility birth rate significantly increased from 53%

to 75%, and CHWs were more likely to attend home births (Darmstadt et al 2009:102-103).

Reproductive Health Matters (2010:198-199) reports a systematic review that was done on the effectiveness of community-based intervention packages for preventing maternal morbidity and mortality and improving neonatal outcomes during pregnancy delivery and the post-partum period. Studies reviewed were from Asia (22), Africa (3), European Union (1) and South America (1). The review did not find a significant reduction in maternal mortality across all studies, but it did find a significant reduction across studies with low risk of bias. Significant reductions were observed in neonatal mortality, stillbirths and perinatal mortality. The interventions also led to reductions in maternal morbidity, increased referrals to a health facility for pregnancy-related complications, improved rates of early breastfeeding, and improved newborn care-related outcomes. The most successful packages were those which emphasised clean practices by involving family members, provision of care through trained community health workers, and strengthened referrals for mothers and newborns (Reproductive Health Matters 2010:198-199) .

To help to strengthen primary care and preventive services, the government of Pakistan introduced the National Programme for Family Planning and Primary Health Care, commonly called the lady health workers (LHW) programme, in 1994. LHWs were mostly young women, resident in the local communities, with at least 8 years of formal schooling, who are trained for 15 months to deliver care in community settings either through home visits or from their residences, known as health homes. Each LHW was responsible for a population of about 1 000-1 500 and provides ANC, contraceptive advice, growth monitoring, and immunisation services (Bhutta, Soofi, Cousens, Mohammad, Memon, Ali, Feroze, Raza, Khan, Wall & Matines 2011:403).

A study was conducted to evaluate the effectiveness of a community-based intervention package, principally delivered through LHWs working with traditional birth attendants and community health committees, for reduction of perinatal and neonatal mortality in a rural district of Pakistan by Bhutta et al (2011:404). The findings reveal that key household behaviours for maternal and early newborn care improved, with evidence of improving trends over time for some indicators. The biggest changes occurred in behaviours related to seeking of antenatal care and in-facility births. Despite low

coverage and high complexity, the intervention was associated with significant reductions in stillbirths and neonatal mortality in this rural district of Pakistan (Bhutta et al 2011:409).

Bhutta et al (2011:404) state that the potential of community-based interventions to reduce newborn morbidity and mortality is well recognised. Such interventions include community health workers delivering preventive and therapeutic interventions. Interventions such as antibiotics at home, community mobilisation through women's support groups or community mobilisers working through individual and group sessions, and community-based interventions delivered through non-governmental organisations or community volunteers. Common features of these interventions include civil society engagement, flexibility of approaches, community volunteers, social mobilisers, or community health workers dedicated to the designated tasks through home visits or group sessions. However, despite the success of these projects (largely undertaken as efficacy trials), translation of these interventions into packages of care and complex interventions that can be delivered within public health systems at scale remains a major challenge. Most of these studies were fairly small and none principally used the public sector, making translation of this evidence to public health systems difficult (Bhutta et al 2011:404).

Lawn, Kinney, Lee, Chopra, Donnay, Paul, Bhutta, Bateman and Darmstadt (2009:125) indicate that community mobilisation is an effective strategy to link families to facility-based obstetric care associated with a significant increase in facility births. Community mobilisation is strongly recommended as a strategy to increase demand for skilled childbirth care, and possibly to improve intra-partum outcomes through reducing the risk for other factors, such as maternal infection, that may compound the risk. Additional evaluation is needed, however, to define impact of community mobilisation strategies on intra-partum-related outcomes and cost-effectiveness. Furthermore, other potential linking strategies such as financial incentives, community referral/transport schemes, risk screening, and maternity waiting homes need to be further evaluated suggested Lawn et al (2009:125) and Goldie et al (2010:13).

2.3.1.6 Training arrangements

Narchi (2011:23) and MDG Report (South Africa 2013:76) indicate that lack of appropriately trained staff is responsible for an inability to follow standard procedures and poor initial assessment and diagnosis, is one of the factors that hinder progress in reducing maternal mortality. Reproductive Health (2010:199), Manithip, Edin, Sihavong, Wahlstrom, Wessel (2013:198), Banchani et al (2014:6) and Beaves et al (2007:96) state that training all health professionals attending births will contribute to reducing maternal deaths. Banchani et al (2014:6) highlight that one of the major reasons that so many countries still have inadequate numbers of skilled midwifery providers is because those grappling with human resources have not paid attention to the need for 'proficiency' in the various competencies required to assist women and newborns. For too long it has been accepted that as long as the health workers received some (often too little) training in midwifery (Banchani et al 2014:6). Midwifery Education Modules developed by the WHO, are aimed at the main causes of maternal death, eclampsia, abortion, prolonged and obstructed labour, post-partum haemorrhage and sepsis (Fort 2012:89). Fort (2012:89) emphasises that it is imperative that medical, nursing and midwifery bodies include in their pre-service curricula the key elements of postpartum and post-natal care, including life-saving skills, and equally important that countries where there is still a low level of post-partum care set up programmes to initiate such care and provide in-service training for existing staff (Fort 2012:89).

Reproductive Health Matters (2010:199-200) emphasises innovative strategies including in-service training, obstetric simulations and drills, rapid response teams, safety checklists, and intra-partum risk assessment aimed to minimise delay and error in emergency obstetric care provision by improving knowledge, competency, and skill retention of providers. Hofmeyer, Haws, Bergstrom, Lee, Okong, Darmstadt, Mullany, Oo and Lawn (2009:33) add that educational tools for training courses and drills may include formal classroom lectures, internet modules, computer-based simulations, model-based simulations with medical equipment, and real-time observed experiences on the maternity ward.

Darmstadt et al (2009:92) argue that while there is a core skill set for SBAs defined by WHO, the training and competency of SBAs in using these core skills varies substantially between settings and countries. In Nepal and Bangladesh, SBAs are

trained for as little as 6 months, yet have been found to have acceptable knowledge and competency. Studies in Zambia, Indonesia, and Vietnam have demonstrated improvements in knowledge and skills of midwives trained in essential newborn care and obstetric life-saving skills. However, an assessment of SBAs in Benin, Rwanda, Kenya, Ecuador, and Jamaica demonstrated poor retention of knowledge and skill competency; only half of SBAs displayed competency to deal with specific obstetric and neonatal complications. Competency and skill retention of providers are major concerns for SBAs, particularly those practicing independently in the community and conducting advanced procedures, emphasizing the need for adequate supervision and monitoring of competency. Monitoring the progress of labour is a core skill for SBAs, and the partogram has been used effectively by midwives in community settings and birthing centres (Darmstadt et al 2009:92).

Harris et al (2011:302) also reveal that the skills required for rural practice differed from the skills needed by their urban-based counterparts. Skills are needed for practicing maternity care in a rural context; and maintaining competence and confidence in these skills is essential. The report further indicate that midwives in their teams required additional skills in obstetric emergency procedures, which many of them gained through training courses such as Advanced Life Support in Obstetrics (ALSO) and/or the Neonatal Advanced Life Support (NALS) training. Some small units then regularly maintained these skills through what is called 'fire drills', in which procedures are practiced on mannequins in simulated emergencies (Harris et al 2011:303).

2.3.1.7 Evaluation, monitoring, research and hospital protocols

Lawn et al (2009:132-133) indicate that programme managers and policy makers require more than a global review of effectiveness, or even cost-effectiveness to decide which strategies and specific interventions will be the most successful in their context. There is no magic "one size fits all" programme to address intra-partum-related mortality; the local epidemiology (mortality rate, causes, and risk factors) as well as health system design and performance, financing and community demand are key factors to consider as suggested by Lawn et al (2009:133).

Chapman et al (2014:314-315) suggest that more research from low- and middle-income countries is needed to better understand and address all the circumstances

around maternal deaths, including further review of the impact that health systems and policies have on them. To reduce these knowledge gaps, research priorities must be identified, prioritized, and addressed and that research findings must be made visible, available, and accessible for appropriate and timely implementation. In a study by Knight et al (2013:3) papers identify inadequate clinical guidelines or poor policy environment as a factor contributing to sub-standard maternal care in the population being studied. Banchani and Tenkorang (2014:6) indicate that the implementation of any policy requires that those involved in implementing such a policy have adequate knowledge of the policy. Those engaged in the implementation of a policy (midwives and doctors) must be engaged in the formulation process of the policy. This will ensure the success of such a policy as their commitment and support will be high. Most of the policies in developing countries tend to be implemented through a top-down approach and are not communicated to those engaged in direct service delivery of health services. In essence, the dissemination of maternal policies at the local level is weak. Communication is also an essential ingredient for the success of a policy. Failure to communicate a policy effectively may lead to implementation failure as revealed by Banchani and Tenkorang (2014:6). In a systematic review study by (Knight et al 2013:5), issues relating to poor policy at the level of the individual facility (for example, bad record keeping) were reported in fourteen articles. The inadequate content and dissemination/enforcement of national clinical guidelines was mentioned in eight and nine articles, respectively (Knight et al 2013:5).

Raven, MCommh, Tolhurst, Tang and Van den Broek (2012:681); Manithip, Edin, Sihavong, Wahlstrom and Wessel (2013:201) and Reproductive Health (2010:204) argue that although pregnant women need safe and effective medical treatment, they are a marginalised research study population. Pregnant women must be included in research so that prescribing decisions are evidence-based (Overgaard et al 2012:979). Reproductive Health (2010:204) indicates that there is debate about the timing of pregnant women's inclusion in studies and the appropriateness of retaining women in clinical trials after they become pregnant. Participation of women in phase 3 clinical trials requires case-by case justification and would be acceptable, e.g. for conditions with no other available therapies and cases where a drug is being developed specifically for a pregnancy-related condition.

2.4 CONCLUSION

Chapter 2 presented the literature reviewed on background to maternal mortality, the causes and associated factors. It also outlined the strategies currently implemented to reduce maternal mortality and the challenges experienced over the past with implementation of the strategies. The next chapter outlines study's research design and the research method.

CHAPTER 3

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

This chapter presents the study's research design and the research method. It also explains the study population, sampling method, the sample number and ethical issues related to sampling. The chapter also addresses data collection approach and method, and the development and testing of the data collection instrument. It further outlines the data collection process, ethical considerations related to data collection, data analysis; and also explains how reliability, external and internal validity was ensured.

3.2 RESEARCH DESIGN

A quantitative descriptive cross-sectional study takes the form of a survey, the researcher measures to quantify the extent of the problem investigated, but does not intervene. The researcher usually selects the sample without reference to exposure or disease, the sample is often drawn at random from a defined population (Joubert & Erhlich 2007:78-85). A quantitative descriptive cross-sectional design was used in order to achieve the objective to describe and evaluate the strategies used to reduce maternal mortality in the Fezile Dabi District and establish its appropriateness. It was a descriptive cross-sectional study that took a form of a survey that used the Maternal and Neonatal Programme Effort Index (MNPI) self-administered questionnaire.

3.3 RESEARCH METHOD

3.3.1 Population

The study population is the group about which the researcher wants to gather information and conclusion from. It should be clearly defined in respect of person, place and time and other factors relevant to the study (Joubert & Erhlich, 2007:94). The population was staff members working in three hospitals of the Fezile Dabi district, one

regional hospital and two district hospitals that offers maternal health care. Hospital A (6 doctors, 25 midwives, 4 operational managers), Hospital B (2 doctors, 24 midwives, 1 operational manager and Hospital C (3 doctors, 12 midwives, 1 manager), comprising a population of 71 (midwives (52), doctors (13), operational managers (6)).

3.3.2 Sampling

A non-probability purposive sampling is a form of sampling that allows for selection of key or typical individuals from the spectrum in which we are interested (Joubert & Erlich 2007:101). A non-probability purposive sampling was used by choosing one hospital in each sub-district as maternity services are provided at all five hospitals as well as at community health centres. The five community health care centres that also offer maternal health care were not included due to time, finance and logistical constraints. Purposive sampling was used to identify and recruit the study participants in order to maximise the representativeness of the population.

3.3.3 Ethical issues related to sampling

Control was exercised by applying the principles of external validity. The sample was chosen purposely in order to maximise the representativeness of the population. Information on the purpose of the study was given to the study respondents. The willing respondents were asked to voluntarily sign the consent form.

3.3.4 Sample

A sample is a sub-group of individuals that can be studied closely, ensuring that good quality information is obtained (Joubert & Erlich 2007:95). All midwives, doctors and operational managers directly involved with maternal healthcare (day and night duty) were recruited and given the questionnaire. The staff nurses, enrolled nursing assistants and locums (including locum doctors) were excluded. The entire sample was given the questionnaire. A non-probability purposive sampling was used by choosing one hospital in each sub-district as maternity services are provided at all five hospitals as well as at community health centres. The five community health care centres that also offer maternal health care were not included due to time, finance and logistical constraints.

3.4 DATA COLLECTION

3.4.1 Data collection approach, process and method

The study was conducted in maternity units of hospitals A, B and C in the Fezile Dabi District of the Free State Province. Research was conducted with permission from Department of Health (Appendix G) and permission from management of hospitals A, B and C (Appendix H). All staff were recruited. Information form (Appendix C) was distributed at their workplace to explain the purpose and the importance of the study, to describe the study procedures and to assist anyone that might have problems in understanding the form. Once the information form was read and understood, the participants were requested to sign a consent form (Appendix D). The MNPI questionnaire was issued to the respondents. The researcher explained and elaborated each section of the questionnaire. Respondent's questions and clarifications were answered by the researcher. Guidance was given to complete the questionnaire. Instructions were given to complete and return the questionnaire to the Head Nursing Manager within two weeks. Strategies were collected by using the questionnaire (Appendix E). The questionnaire was completed by maternal health care staff of hospitals A, B and C.

3.4.2 Development and testing of the data collection instrument

A pilot study was conducted in a hospital that was not included in the study to ensure validity and reliability. A test-retest reliability was used on 10% of the sample. Respondents (1 doctor, 1 operational manager, 1 midwife) were asked to complete in the same questionnaire twice.

3.4.3 Characteristics of the data collection instrument

The MNPI is a research instrument designed to measure national efforts directed to improving the health of mothers and infants. It was applied first in 1999 for 49 developing countries, including the eight largest countries that account for two-thirds of the population of the developing world. It is based on an 81-item structured questionnaire with subdivisions for different components. Scoring of the questions is on a 0-5 scale, converted to a 0-100 percent range. The adapted MPNI tool was

contextually used in this study by measuring hospital efforts and not national efforts. The first part of the questionnaire obtained demographic information of the respondent (for example name, number of years worked in the maternity unit, level of qualifications, occupation and telephone numbers). The second part evaluated the hospital's efforts used to reduce maternal mortality in the different stages of maternal health care (obstetric care, ANC, intra-partum care, postnatal care, family planning and general supporting functions e.g. hospital protocols).

3.4.4 Ethical considerations related to data collection

Confidentiality and anonymity were maintained throughout the study and no personal details were revealed. Confidentiality and anonymity of all the study respondents and hospital names were maintained by not attaching names to any data collected. Participation in the study was voluntary and the respondents were free to refuse to participate or withdraw participation at any time. Once the information form was read and understood, the willing respondents were asked to sign a consent form.

3.5 DATA ANALYSIS

Data was captured and analysed using the computer statistical package IBM Statistical Package for Social Sciences (SPSS) version 22.0. The results have been analysed using non-parametric statistical test due to the sample size and non-Gaussian distribution of the data. Categorical data were presented as percentages. Descriptive statistics of the study participants were computed as frequency distributions (character variables), medians and interquartile range (Polit & Beck 2008:556-641). The researcher's personal computer was used to capture the data.

3.6 INTERNAL AND EXTERNAL VALIDITY OF THE STUDY

3.6.1 Internal validity

Evaluation of strategies was done using questionnaire (Appendix E). This ensured that the questionnaires distributed were the same for all participants and were of high quality. To ensure that content validity of the data gathering instrument was suitable, two experts in the field of obstetrics and gynaecology acted as validators. Content

Validity Index was calculated to determine the acceptability of the validity of the data gathering instrument.

3.6.2 External validity

External validity is the validity that inferences about observed relationships will hold over variations in persons, setting, time or measures of the outcomes. It concerns the generalisability of causal inferences (Polit & Beck 2008:287). Control was exercised by applying the principles of external validity. The sample was chosen purposely in order to maximise the representativeness of the population.

3.7 CONCLUSION

This chapter presented the study research design and the research method, data collection and analysis and explained how reliability and validity were ensured. The next chapter outlines the findings on evaluation of maternal mortality reduction strategies of the three hospitals of the Fezile Dabi District of the Free State Province. It also outlines the data management and analysis of research results.

CHAPTER 4

THE PRESENTATION, DESCRIPTION AND ANALYSIS OF THE RESEARCH RESULTS

4.1 INTRODUCTION

This chapter presents data management and the results from a cross-sectional descriptive study that used the MNPI self-administered questionnaire. The tool was used to measure strategies used to reduce maternal mortality of the three hospitals in the Fezile Dabi District of the Free State Province, South Africa.

4.2 DATA MANAGEMENT

All questionnaires were checked for data file errors. The researcher's computer was used to capture data. Data were individually entered into Microsoft office Excel. Data was captured and analysed using the computer statistical package IBM SPSS version 22.0. Descriptive statistics of the responses were computed as frequency distributions (character variables), medians and interquartile range. Categorical data were presented as percentages. The difference between the frequencies was assessed using Fisher's exact tests. The difference between the central tendencies was assessed using the Kruskal Wallis.

4.3 RESEARCH RESULTS

Among the key weaknesses of the study is the overall low response rate (43.5%) of the three hospitals. The response rate for hospital A was 6 respondents (37.5%), 7 respondents for hospital B (25.9%) and 21 respondents hospital C (60%). Guidance was given to complete and return the questionnaire to the respondents and the Head Nursing Manager (of each hospital) within two weeks. It took three months for the respondents to complete and return the questionnaire. Moreover, there were missing values in the datasets. Hospital C had a larger sample than hospitals A and B. Hospital C does not offer family planning and hospitals A and B only offer high-risk ANC,

“routine” antenatal care is offered at the community health care centres and therefore the findings should be interpreted within the context of these limitations.

4.3.1 Sample characteristics

4.3.1.1 Professional qualifications and occupation

Hospital A had (1 doctor, 4 midwives, 1 operational manager), Hospital B had (6 midwives, 1 operational manager and Hospital C had (2 doctors, 15 midwives, 4 operational managers); comprising a population of 34 (midwives (25), doctors (3), management- operational managers (6).

4.3.1.2 Number of years in the maternal health unit

The respondents’ work experience was that hospital A ranged between 6 weeks and 25 years, hospital B ranged between 4 months and 18 years and hospital C ranged between 4 months and 31 years.

Purposive sampling was used to identify and recruit the study participants. The sample was chosen purposely in order to maximise the representativeness of the population.

4.3.2 Overall results of the strategies used to reduce maternal mortality of the three hospitals combined

The tool had demographic information of the respondent (name, hospital, number of years worked in the maternity unit, level of qualifications, occupation and telephone numbers). The second part of the tool evaluated the hospital’s efforts used to reduce maternal mortality in the different stages of maternal health care (obstetric care, ANC, intra-partum care, postnatal care, family planning and general supporting functions e.g. hospital protocols, training arrangements, information, education and communication, monitoring, evaluation and research). Scoring of the questions was on a 0-5 scale, converted to a 0-100 percent range. The adapted MPNI tool was used, not the entire instrument. The tool was used to measure hospital efforts not national efforts, the tool was therefore applied contextually, and issues that are addressed nationally were excluded.

4.3.2.1 Obstetric care

Table 4.1 Overall combined obstetric care

Obstetric care	Overall					
	0	1	2	3	4	5
Use a partograph				5 (14.3)	5 (14.3)	24 (68.6)
Have adequate antibiotics			3 (8.6)	4 (11.4)	9 (25.7)	17 (48.6)
Perform caesarian section			1 (2.9)	4 (11.4)	6 (17.1)	23 (65.7)
Perform vacuum aspiration	2 (5.7)		2 (5.7)	2 (5.7)	4 (11.4)	24 (68.6)
Perform manual removal			3 (8.6)	3 (8.6)	8 (22.9)	18 (51.4)
Administer antibiotics intravenously			3 (8.6)	2 (5.7)	5 (14.3)	24 (68.6)
Perform blood transfusions				4 (11.4)	4 (11.4)	26 (74.3)
Manage postpartum haemorrhage				1 (2.9)	13 (37.1)	20 (57.1)
Have transportation arrangements		2 (5.7)	2 (5.7)	4 (11.4)	7 (20)	18 (51.4)

Under overall obstetric care of the three hospitals combined, the highest rating was performance of blood transfusions (74.3%). Ability to perform manual removal of placenta and quick transportation arrangements to move a woman with obstructed labor both rated 51.4%. The lowest rating was for adequate antibiotics supplies at hand (48.6%).

4.3.2.2 Antenatal care

Table 4.2 Overall combined antenatal care

Antenatal care	Overall					
	0	1	2	3	4	5
Are informed about danger signs			1 (2.9)	3 (8.6)	10 (28.6)	20 (57.1)
Are examined for hypertension					5 (14.3)	29 (82.9)
Are examined for syphilis			1 (2.9)	1 (2.9)	3 (8.6)	29 (82.9)
Are examined for Tuberculosis (TB)				2 (5.7)		31 (88.6)
Are examined for diabetes	1 (2.9)			2 (5.7)	1 (2.9)	30 (85.7)
Are examined for malnutrition	2 (5.7)			3 (22.9)	5 (14.3)	17 (48.6)
Receive urine test	1 (2.9)				7 (20)	26 (74.3)
Are examined for malaria	12 (34.3)	4 (11.4)	3 (8.6)	3 (8.6)	1 (2.9)	9 (25.7)
Are offered voluntary counseling					4 (11.4)	29 (82.9)
Receive full Intermittent Preventative Treatment (IPT)	14 (40)	2 (5.7)	3 (8.6)	3 (8.6)	3 (8.6)	7 (20)
Are protected by Insecticides-treated nets (ITN)	16 (45.7)	3 (8.6)	2 (5.7)	4 (11.4)	2 (5.7)	5 (14.3)
Receive tetanus injection				1 (2.9)	5 (14.3)	28 (80)
Receive iron folate tablets for anaemia				1 (2.9)	2 (5.7)	31 (88.6)
Safe technologies for abortion	2 (5.7)			2 (5.7)	4 (11.4)	25 (71.4)
Able to receive psycho-social care	1 (2.9)	1 (2.9)	2 (5.7)	7 (20)	6 (17.1)	16 (45.7)

Under overall antenatal care of the three hospitals combined, the ability to receive iron tablets for anemia and TB examination and treatment both rated the highest (88.6%). Patient protection by insecticide-treated nets obtained the lowest rating of 14.3%. Intermittent preventative treatment for malaria obtained the rating of 20%. Patient

examination for malaria obtained 25.7%. The ability to receive psycho-social referrals rated 45.7%. Patient examination for malnutrition rated 48.6%.

4.3.2.3 *Intra-partum care*

Table 4.3 Overall combined for intra-partum care

Intra-partum care	Overall					
	0	1	2	3	4	5
Are able to receive emergency obstetric care			1 (2.9)		7 (20)	26 (74.3)
Attended by a professional	1 (2.9)	1 (2.9)			5 (14.3)	27 (77.1)
Checked for signs of hypertension, anaemia or infection	1 (2.9)				5 (14.3)	28 (80)
Have labour monitored				2 (5.7)	8 (22.9)	24 (68.6)
Are provided an appointment for follow up			2 (8.6)	1 (2.9)	6 (17.1)	24 (68.6)

All aspects regarding intra-partum care scored above average (Table 4.3).

4.3.2.4 *Postpartum care*

Table 4.4 Overall combined for postpartum care

Postpartum care	Overall					
	0	1	2	3	4	5
Post abortion care reviews	3 (8.6)	1 (2.9)		5 (14.3)	7 (20)	14 (40)
Postpartum services		2 (5.7)		4 (11.4)	3 (8.6)	22 (62.9)
Referrals for psycho-social care	3 (8.6)		4 (11.4)	5 (14.3)	5 (14.3)	14 (40)

The 48-hour post abortion care, reviews, follow-up and postpartum psycho-social referrals obtained the lowest ratings for care received (40%).

4.3.2.5 Family planning

Table 4.5 Overall combined for family planning

Family planning	Overall					
	0	1	2	3	4	5
Routinely offer family planning post termination				3 (8.6)	2 (5.7)	25 (71.4)
Routinely offer family planning during postpartum care	1 (2.9)			3 (8.6)	1 (2.9)	27 (77.1)
Have contraceptive pill regularly	5 (14.3)		1 (2.9)	2 (5.7)	6 (17.1)	18 (51.4)
Have progestin pill	7 (20)		1 (2.9)	2 (5.7)	4 (11.4)	17 (48.6)
Have skilled staff for Intra Uterine Device insertion	6 (17.1)		4 (11.4)	4 (11.4)	3 (8.6)	12 (34.3)
Can offer female sterilisation	1 (2.9)	2 (5.7)		1 (2.9)	3 (8.6)	25 (71.4)
Can offer male sterilisation	17 (48.6)	1 (2.9)	1 (2.9)	1 (2.9)	1 (2.9)	8 (22.9)

Routine family planning at postpartum visits rated the highest (77.1%). Sterilisation of male patients rated the lowest (22.9%). Skilled staff to insert intra-uterine devices rated 34.3%. Progestrin pill for breastfeeding women rated 48.6%.

4.3.2.6 Hospital protocols

Table 4.6 Overall combined for hospital protocols

Hospital protocols	Overall					
	0	1	2	3	4	5
Protocols toward safe pregnancy			2 (5.7)		6 (17.1)	25 (71.4)
Protocols are developed through adequate consultation	6 (17.1)		3 (8.6)	3 (8.6)	5 (14.3)	14 (40)
Protocols are reasonable and fair			2 (5.7)	4 (11.4)	9 (25.7)	17 (48.6)
Protocols exists toward treatment of complications	3 (8.6)			2 (5.7)	11 (31.4)	16 (45.7)
Protocols are vigorously implemented	1 (2.9)	2 (5.7)	3 (8.6)	4 (11.4)	5 (14.3)	16 (45.7)
Senior managers in the hospital issue statements	7 (20)	2 (5.7)	10 (28.6)	3 (8.6)	2 (5.7)	7 (20)

Adequate protocols toward pregnancy and delivery rated the highest (71.4%). Frequent statements to the press and public to support improvements for save delivery and pregnancy and delivery rated the lowest (20%). Development of protocols through adequate consultation with other patients, women and private practitioners rated 40%.

4.3.2.7 Information, education, communication

Table 4.7 Overall combined for information, education and communication

Information, education and communication	Overall					
	0	1	2	3	4	5
Hospital uses mass media to educate the public about pregnancy complications	12 (34.3)	2 (5.7)	5 (14.3)	3 (8.6)	3 (8.6)	6 (17.1)
Hospital uses mass media to educate public about harmful home practices for pregnancy	11 (31.4)	2 (5.7)	6 (17.1)	4 (11.4)	3 (8.6)	4 (11.4)
Hospital has mass media for information regarding pre-existing ill health	11 (31.4)	1 (2.9)	6 (17.1)	4 (11.4)	2 (5.7)	4 (11.4)
Hospital supplies adequate educational material	1 (2.9)	3 (8.6)	1 (2.9)	5 (14.3)	7 (20)	16 (45.7)
Hospital have community health workers	7 (20)	1 (2.9)		6 (17.1)	6 (17.1)	12 (34.3)
Hospital has community mobilisation	9 (25.7)	2 (5.7)	2 (5.7)	6 (17.1)	5 (14.3)	
Hospital offer sexual reproductive health education	11 (31.4)	1 (2.9)	3 (8.6)	6 (17.1)	3 (8.6)	7 (20)

Adequate educational material supplies by the hospital rated the highest (45.7%). Mass media usage to educate the public about harmful home practices for pregnancy, delivery and postpartum care and mass media campaigns for information regarding pre-existing ill health as a risk factor in maternal health both rated lowest (11.4%). Mass media usage to educate the public about symptoms of pregnancy complications rated 17.1%.

4.3.2.8 Training arrangements

Table 4.8 Overall combined for training arrangements

Training arrangements	Overall					
	0	1	2	3	4	5
All midwives and nurses in hospital	2 (5.7)	1 (2.9)	1 (2.9)	1 (2.9)	7 (20)	19 (54.3)
Received by doctors in hospital	1 (2.9)	2 (5.7)	1 (2.9)	1 (2.9)	10 (28.6)	15 (42.9)
Newly hired midwives and nurses	8 (22.9)		2 (5.7)	9 (25.7)	4 (11.4)	9 (25.7)
Received by newly hired doctors	8 (22.9)		3 (8.6)	6 (17.1)	5 (14.3)	9 (25.7)

Newly hired midwives training for safe pregnancy and delivery within six months and special in-service training of normal deliveries for newly hired doctors rated lowest 25.7%.

4.3.2.9 Evaluation, monitoring and research

Table 4.9 Overall combined for monitoring, evaluation and research

Monitoring, evaluation and research	Overall					
	0	1	2	3	4	5
Routine statistical system provided	1 (2.9)		1 (2.9)	2 (5.7)	8 (22.9)	17 (48.6)
By staff at management level				5 (14.3)	10 (28.6)	19 (54.3)
Recent surveys provided			2 (5.7)	2 (5.7)	4 (11.4)	26 (74.3)
Management systematically use statistics	1 (2.9)	2 (5.7)	1 (2.9)	2 (5.7)	5 (14.3)	21 (60)
Hospital follows a regular procedure of care					4 (11.4)	28 (80)

Hospital follows a regular procedure of care rated the highest (80%). Provision of good periodic information on supplies, personnel, deliveries, caesarian sections and cases of

complications and monitoring and analysis of results from routine statistics by management staff both rated the lowest (48.6%).

4.3.3 Comparison of group frequency of the three hospitals

4.3.3.1 Obstetric care

Table 4.10 Group frequencies for obstetric care

Obstetric care	Scale	A n (%)	B n (%)	C n (%)	P-value
Manage postpartum haemorrhage	0				0.031
	1				
	2				
	3			1 (4.8)	
	4	4 (66.7)	5 (71.4)	4 (19)	
	5	2 (33.3)	2 (28.6)	16 (76.2)	
Administer antibiotics intravenously	0				0.031
	1				
	2		3 (42.9)		
	3			2 (9.5)	
	4	2 (33.3)	1 (14.3)	2 (9.5)	
	5	4 (66.7)	3 (42.9)	17 (81)	
Perform manual removal	0				0.002
	1				
	2		3 (42.9)		
	3	2 (33.3)	1 (14.3)		
	4	1 (16.7)	1 (14.3)	6 (28.6)	
	5	3 (50)	1 (14.3)	14 (66.7)	
Perform vacuum aspiration	0	1 (16.7)	1 (14.3)		0.156
	1				
	2	1 (16.7)	1 (14.3)		
	3			2 (9.5)	
	4			4 (19)	
	5	4 (66.7)	5 (71.4)	15 (71.4)	
Use a partograph	0				0.181
	1				
	2				
	3	2 (33.3)	2 (28.6)	1 (4.8)	
	4	1 (16.7)	1 (14.3)	3 (14.3)	
	5	3 (50)	4 (57.1)	17 (81)	
Have transportation arrangements	0				0.020
	1	1 (16.7)	1 (14.3)		
	2	1 (16.7)	1 (14.3)		
	3	1 (16.7)	1 (14.3)	2 (9.5)	
	4	1 (16.7)	3 (42.9)	3 (14.3)	

Obstetric care	Scale	A n (%)	B n (%)	C n (%)	P-value
	5	2 (33.3)	1 (14.3)	15 (71.4)	
Have adequate antibiotics	0				0.793
	1				
	2		1 (14.3)	2 (9.5)	
	3	1 (16.7)	1 (14.3)	2 (9.5)	
	4	1 (16.7)	3 (42.9)	5 (23.8)	
	5	4 (66.7)	1 (14.3)	5 (23.8)	
Perform blood transfusions	0				0.270
	1				
	2		1 (14.3)		
	3	1 (16.7)	1 (14.3)	1 (4.8)	
	4		3 (42.9)	4 (19)	
	5	5 (83.3)	2 (28.6)	16 (76.2)	
Perform caesarian section	0				0.147
	1				
	2	1 (16.7)			
	3	1 (16.7)	1 (14.3)	2 (9.5)	
	4		3 (42.9)	3 (14.3)	
	5	4 (66.7)	3 (42.9)	16 (76.2)	

The management for post-partum haemorrhage (76.2%) and intravenous administration of antibiotics (81%) for Hospital C was significantly higher than hospital A and B, $p=0.031$. Manual removal for retained placenta for hospital B was significantly lower 14.3% than hospitals A and C, $p=0.002$. Quick transportation arrangements to move a woman with obstructed labour for hospital C was significantly higher than hospitals A and B, $p=0.020$.

4.3.3.2 Antenatal care

Table 4.11 Group frequencies for antenatal care

Antenatal care	Scale	A n (%)	B n (%)	C n (%)	P-value
Receive iron folate tablets for anaemia	0				0.322
	1				
	2				
	3	1 (16.7)			
	4		1 (14.3)	1 (4.8)	
	5	5 (83.3)	6 (85.7)	20 (95.2)	
Examined for hypertension	0				0.019
	1				
	2				
	3				
	4	3 (50)	1 (14.3)	1 (4.8)	
	5	3 (50)	6 (85.7)	20 (95.2)	
Examined for syphilis	0				0.155
	1				
	2		1 (14.3)		
	3	1 (16.7)			
	4	1 (16.7)		2 (9.5)	
	5	4 (66.7)	6 (85.7)	19 (90.5)	
Receive tetanus injection	0				0.409
	1				
	2				
	3	1 (16.7)			
	4	1 (16.7)	1 (14.3)	3 (14.3)	
	5	4 (66.7)	6 (85.7)	18 (85.7)	
Informed about danger signs	0				0.050
	1				
	2		1 (14.3)		
	3	2 (33.3)		1 (4.8)	
	4	3 (50)	1 (14.3)	6 (28.6)	
	5	1 (16.7)	5 (71.4)	14 (66.7)	
Offered voluntary counseling	0				1.000
	1				
	2				
	3				
	4		1 (14.3)	3 (14.3)	
	5	6 (100)	6 (85.7)	17 (81)	
Receive urine test	0			1 (4.8)	0.536
	1				
	2				
	3				

Antenatal care	Scale	A n (%)	B n (%)	C n (%)	P-value
	4	2 (33.3)		5 (23.8)	
	5	4 (66.7)	7 (100)	15 (71.4)	
Receive full Intermittent Preventative Treatment (IPT)	0	6 (100)	2 (28.6)	6 (28.6)	0.239
	1		1 (14.3)	1 (4.8)	
	2			3 (14.3)	
	3			3 (14.3)	
	4		1 (14.3)	2 (9.5)	
	5		3 (42.9)	4 (19)	
Are protected by ITN	0	5 (83.3)	3 (42.9)	7 (33.3)	0.143
	1	1 (16.7)	1 (14.3)	2 (9.5)	
	2			2 (9.5)	
	3			4 (19)	
	4		2 (28.6)		
	5		1 (14.3)	4 (19)	
Are examined for malaria	0	5 (83.3)	1 (16.7)	6 (28.6)	0.111
	1	1 (16.7)	2 (28.6)	1 (4.8)	
	2			3 (14.3)	
	3			3 (14.3)	
	4			1 (4.8)	
	5		4 (57.1)	5 (23.8)	
Are examined for TB	0				0.392
	1				
	2				
	3			2 (9.5)	
	4	1 (16.7)			
	5	5 (83.3)	7 (100)	19 (90.5)	
Are examined for diabetes	0			1 (4.8)	0.771
	1				
	2				
	3	1 (16.7)		1 (4.8)	
	4			1 (4.8)	
	5	5 (83.3)	7 (100)	18 (85.7)	
Are examined for malnutrition	0			2 (9.5)	0.632
	1				
	2				
	3	3 (50)	1 (14.3)	4 (19)	
	4	1 (16.7)	2 (28.6)	2 (9.5)	
	5	2 (33.3)	4 (57.1)	11 (52.4)	
Safe technologies for abortion	0				0.538
	1				
	2				
	3		1 (14.3)		
	4	2 (33.3)	1 (14.3)		
	5	4 (66.7)	6 (85.7)		
Able to	0	1 (16.7)		2 (9.5)	

Antenatal care	Scale	A n (%)	B n (%)	C n (%)	P-value
receive psycho-social care	1		1 (14.3)		0.099
	2				
	3	3 (50)	1 (14.3)	1 (4.8)	
	4	2 (33.3)		2 (9.5)	
	5		5 (71.4)	15 (71.4)	

Examination and treatment for hypertension for hospital A was significantly lower (50%) than hospitals B and C, $p=0.019$. Patient information about the danger signs of obstetric and newborn complications was significantly higher for hospital B (71.4%) than hospitals A and C, $p=0.050$. Ability to receive psycho-social referrals and treatment for hospital B was significantly higher (71.4%) than hospitals A and C, $p=0.099$.

4.3.3.3 *Intra-partum care*

Table 4.12 Group frequencies for intra-partum care

Intra-partum care	Scale	A n (%)	B n (%)	C n (%)	P-value
Are attended by a professionally	0				0.459
	1	1 (16.7)			
	2				
	3				
	4	1 (16.7)		4 (19)	
	5	4 (66.7)	7 (100)	16 (76.2)	
Have labour monitored	0				0.070
	1				
	2				
	3		1 (14.3)	1 (4.8)	
	4	4 (66.7)	1 (14.3)	3 (14.3)	
	5	2 (33.3)	5 (71.4)	17 (81)	
Are checked for signs of hypertension, anaemia and infection	0			1 (4.8)	0.587
	1				
	2				
	3				
	4	2 (33.3)	1 (14.3)	2 (9.5)	
	5	4 (66.7)	6 (85.7)	18 (85.7)	
Are able to receive emergency obstetric care	0				0.439
	1				
	2		1 (14.3)		
	3				
	4	1 (16.7)	2 (28.6)	4 (19)	

Intra-partum care	Scale	A n (%)	B n (%)	C n (%)	P-value
	5	5 (83.3)	4 (57.1)	17 (81)	
Are provided an appointment for checkup	0				0.213
	1				
	2	2 (33.3)		1 (4.8)	
	3			1 (4.8)	
	4	2 (33.3)	1 (14.3)	3 (14.3)	
	5	2 (33.3)	6 (85.7)	16 (76.2)	

The monitoring of labour for hospital A was significantly lower than hospitals B and C, $p=0.070$.

4.3.3.4 Postpartum care

Table 4.13 Group frequencies for postpartum care

Postpartum care	Scale	A n (%)	B n (%)	C n (%)	P-value
Post abortion care reviews	0	1 (16.7)			0.599
	1	1 (16.7)			
	2			2 (9.5)	
	3	1 (16.7)	1 (14.3)	3 (14.3)	
	4	2 (33.3)	2 (28.6)	3 (14.3)	
	5	1 (16.7)	4 (57.1)	9 (42.9)	
Postpartum services	0	1 (16.7)			0.369
	1			1 (4.8)	
	2				
	3	2 (33.3)	1 (14.3)	1 (4.8)	
	4		1 (14.3)	2 (9.5)	
	5	3 (50)	5 (71.4)	14 (66.7)	
Referrals for psycho-social care	0	1 (16.7)		2 (9.5)	0.102
	1				
	2	3 (50)		1 (4.8)	
	3		2 (28.6)	3 (14.3)	
	4	1 (16.7)		4 (19)	
	5	1 (16.7)	5 (71.4)	8 (38.1)	

There was no significant difference between the three hospitals, $p>0.05$.

4.3.3.5 Family planning

Table 4.14 Group frequencies for family planning

Family planning	Scale	A n (%)	B n (%)	C n (%)	P-value
Routinely offer family planning after post termination	0	1 (16.7)			0.930
	1				
	2	3 (50)			
	3			2 (9.5)	
	4	1 (16.7)	1 (14.3)	1 (4.8)	
	5	1 (16.7)	6 (85.7)	14 (66.7)	
Routinely offer family planning during postpartum care	0			1 (4.8)	0.519
	1				
	2				
	3			3 (14.3)	
	4		1 (14.3)		
	5	6 (100)	6 (85.7)	15 (71.4)	
Have contraceptive pill regularly	0				0.673
	1				
	2			1 (4.8)	
	3		1 (14.3)	1 (4.8)	
	4	2 (33.3)	1 (14.3)	3 (14.3)	
	5	4 (66.7)	5 (71.4)	9 (42.9)	
Have progestin pill	0	2 (33.3)		5 (23.8)	0.343
	1				
	2		1 (14.3)		
	3	1 (16.7)		1 (4.8)	
	4		2 (28.6)	2 (9.5)	
	5	3 (50)	4 (57.1)	10 (47.6)	
Have skilled staff for UID	0			6 (28.6)	0.178
	1				
	2	2 (33.3)		2 (9.5)	
	3	1 (16.7)	2 (28.6)	1 (4.8)	
	4	1 (16.7)		2 (9.5)	
	5	2 (33.3)	4 (57.1)	6 (28.6)	
Can offer sterilisation to female	0			1 (4.8)	0.436
	1	1 (16.7)	1 (14.3)		
	2				
	3			1 (4.8)	
	4	1 (16.7)	1 (14.3)	1 (4.8)	
	5	4 (66.7)	5 (71.4)	16 (76.2)	
Can offer sterilisation to male	0	6 (100)	2 (28.6)	9 (42.9)	0.329
	1			1 (4.8)	
	2			1 (4.8)	
	3		1 (14.3)		
	4			1 (4.8)	
	5		3 (42.9)	5 (23.8)	

There was no significant difference between the three hospitals, $p > 0.05$.

4.3.3.6 Hospital protocols

Table 4.15 Group frequencies for hospital protocols

Hospital protocols	Scale	A n (%)	B n (%)	C n (%)	P-value
Protocols toward pregnancy and delivery	0				0.753
	1				
	2		1 (14.3)	1 (4.8)	
	3				
	4	2 (33.3)	1 (14.3)	3 (14.3)	
	5	4 (66.7)	5 (71.4)	16 (76.2)	
Protocols are developed through adequate consultation	0	2 (33.3)		3 (14.3)	0.439
	1				
	2	1 (16.7)	1 (14.3)	1 (4.8)	
	3	1 (16.7)	1 (14.3)	1 (4.8)	
	4	1 (16.7)	2 (28.6)	2 (9.5)	
	5	1 (16.7)	2 (28.6)	11 (52.4)	
Protocols are reasonable and fair	0				0.066
	1				
	2	1 (16.7)		1 (4.8)	
	3	3 (50)		1 (4.8)	
	4	1 (16.7)	3 (42.9)	5 (23.8)	
	5	1 (16.7)	4 (57.1)	12 (57.1)	
Protocols exists toward treatment of complications	0				0.638
	1				
	2				
	3	1 (16.7)		1 (4.8)	
	4	3 (50)	3 (42.9)	5 (23.8)	
	5	2 (33.3)	4 (57.1)	10 (47.6)	
Protocols are vigorously implemented	0			1 (4.8)	0.184
	1	1 (16.7)	1 (14.3)		
	2	2 (33.3)		1 (4.8)	
	3		1 (14.3)	3 (14.3)	
	4	1 (16.7)	2 (28.6)	2 (9.5)	
	5	2 (33.3)	2 (28.6)	12 (57.1)	
Senior managers in the hospital issue statements	0		1 (14.3)	6 (28.6)	0.177
	1	1 (16.7)	1 (14.3)		
	2	3 (50)		4 (19)	
	3	1 (16.7)	3 (42.9)	1 (4.8)	
	4		1 (14.3)	1 (4.8)	
	5	1 (16.7)	1 (14.3)	6 (28.6)	

Reasonable and fair protocols for personnel to provide maternal health services for A was significantly lower than hospitals C and B, $p=0.066$.

4.3.3.7 Information, education and communication

Table 4.16 Group frequencies for information, education and communication

Information, education, communication	Scale	A n (%)	B n (%)	C n (%)	P-value
Hospital uses mass media to educate the public about complications	0	3 (50)	3 (42.9)	6 (28.6)	0.123
	1	1 (16.7)		1 (4.8)	
	2		2 (28.6)	3 (14.3)	
	3	2 (33.3)		1 (4.8)	
	4		2 (28.6)	1 (4.8)	
	5			6 (28.6)	
Hospital uses mass media to educate public about harmful home practices	0	2 (33.3)	4 (57.1)	5 (23.8)	0.600
	1	1 (16.7)		1 (4.8)	
	2			4 (19)	
	3	2 (33.3)	1 (14.3)	2 (9.5)	
	4		1 (14.3)	2 (9.5)	
	5			4 (19)	
Hospital has mass media for information regarding the management of pregnancy	0	3 (50)	4 (57.1)	4 (19)	0.342
	1			1 (4.8)	
	2		2 (28.6)	2 (9.5)	
	3	1 (16.7)		4 (19)	
	4			1 (4.8)	
	5	2 (33.3)		4 (19)	
Hospital supplies adequate	0	3 (50)		1 (4.8)	0.000
	1				
	2			1 (4.8)	
	3	1 (16.7)	2 (28.6)	2 (9.5)	
	4		5 (71.4)	2 (9.5)	
	5	2 (33.3)		14 (66.7)	
Hospital have community health workers	0	1 (16.7)		5 (23.8)	0.534
	1				
	2				
	3	1 (16.7)		5 (23.8)	
	4	2 (33.3)		2 (9.5)	
	5	2 (33.3)		7 (33.3)	
Hospital has community mobilisation	0	2 (33.3)	1 (14.3)	5 (23.8)	0.020
	1	1 (16.7)	1 (14.3)	1 (4.8)	
	2	1 (16.7)		1 (4.8)	
	3		2 (28.6)	4 (19)	
	4	2 (33.3)	3 (42.9)		
	5			7 (33.3)	

Information, education, communication	Scale	A n (%)	B n (%)	C n (%)	P-value
Hospital offer reproductive health education	0	2 (33.3)	2 (28.6)	7 (33.3)	0.834
	1			1 (4.8)	
	2			3 (14.3)	
	3	1 (16.7)	2 (28.6)	3 (14.3)	
	4	2 (33.3)	3 (42.9)	1 (4.8)	
	5	1 (16.7)		4 (19)	

Adequate educational materials supplies by the hospital to inform patients about safe practices was significantly lower for hospital A than hospitals C and B, $p=0.000$. Community mobilisation projects for hospital A was significantly lower than hospitals B and C, $p=0.020$.

4.3.3.8 Training arrangement

Table 4.17 Group frequencies for training arrangement

Training arrangements	Scale	A n (%)	B n (%)	C n (%)	P-value
All midwives and nurses in hospital	0	1 (16.7)		1 (4.8)	0.545
	1	1 (16.7)			
	2		1 (14.3)		
	3			1 (4.8)	
	4	1 (16.7)	2 (28.6)	4 (19)	
	5	3 (50)	4 (57.1)	12 (57.1)	
Doctors in hospital	0	1 (16.7)			0.177
	1	1 (16.7)	1 (14.3)		
	2		1 (14.3)		
	3			1 (4.8)	
	4	2 (33.3)	3 (42.9)	5 (23.8)	
	5	2 (33.3)	2 (28.6)	11 (52.4)	
Newly hired midwives and nurses	0		4 (57.1)	4 (19)	0.044
	1				
	2	1 (16.7)	1 (14.3)		
	3	3 (50)	2 (28.6)	4 (19)	
	4	1 (16.7)		3 (14.3)	
	5	1 (16.7)		8 (38.1)	
Newly hired doctors	0		5 (71.4)	2 (9.5)	0.014
	1	1 (16.7)			
	2		1 (14.3)	2 (9.5)	
	3	3 (50)		3 (14.3)	
	4	1 (16.7)		4 (19)	
	5	1 (16.7)		8 (38.1)	

Training for safe pregnancy and delivery care within the first six months for newly hired midwives and nurses was significantly lower for hospital B than hospitals C and A, $p=0.014$.

4.3.3.9 Evaluation, monitoring and research

Table 4.18 Group frequencies for evaluation, monitoring and research

Monitoring, evaluation, research	Scale	A n (%)	B n (%)	C n (%)	P-value
Provision of a routine statistical system	0	1 (16.7)			0.012
	1				
	2	1 (16.7)			
	3		2 (28.6)	3 (14.3)	
	4	2 (33.3)	3 (42.9)		
	5	2 (33.3)	2 (28.6)	13 (61.9)	
Staff at management level	0				0.345
	1				
	2				
	3	1 (16.7)	1 (14.3)	3 (14.3)	
	4	2 (33.3)	4 (57.1)	4 (19)	
	5	3 (50)	2 (28.6)	14 (66.7)	
Survey data on maternal events	0				0.670
	1			1 (4.8)	
	2		1 (14.3)		
	3	1 (16.7)		1 (4.8)	
	4	1 (16.7)	1 (14.3)	2 (9.5)	
	5	4 (66.7)	5 (71.4)	17 (81)	
Management systematically use statistics	0		1 (14.3)		0.014
	1		2 (28.6)		
	2		1 (14.3)		
	3	1 (16.7)		1 (4.8)	
	4	2 (33.3)	1 (14.3)	2 (9.5)	
	5	3 (50)	2 (28.6)	16 (76.2)	
Hospital follows a regular procedure to review cases	0				1.000
	1				
	2				
	3				
	4	1 (16.7)	1 (16.7)	2 (9.5)	
	5	5 (83.3)	5 (83.3)	17 (81)	

Provision of good periodic information on supplies, personnel, deliveries, caesarian sections and cases of complications by a routine statistical system for C was significantly higher than A and B, $p=0.012$. Systematic use of statistical information for decisions and reconsideration of strategies for reducing maternal mortality by management for C was significantly higher than hospitals A and B, $p=0.014$.

4.3.4 Comparison of the group medians of the three hospitals

Table 4.19 Comparison of group medians of the three hospitals

	Percentiles	A	B	C	Kruskal-Wallis p-value
Obstetric care	25 th -	3.72	3.66	4.44	0.005
	50 th -	4.05	3.88	4.77	
	75 th -	4.75	4.25	5.00	
Antenatal care	25	3.20	3.88	3.72	0.044
	50	3.60	4.33	4.33	
	75	3.85	4.93	4.75	
Intrapartum care	25	3.85	4.60	4.40	0.182
	50	4.40	4.80	5.00	
	75	4.85	5.00	5.00	
Postpartum care	25	1.25	3.66	3.50	0.143
	50	3.16	5.00	4.50	
	75	4.50	5.00	5.00	
Family planning	25	3.14	3.85	2.71	0.188
	50	3.64	4.40	3.57	
	75	3.90	4.85	4.85	
Hospital protocols	25	2.54	3.16	3.43	0.258
	50	3.16	3.66	4.16	
	75	4.33	4.33	4.81	
Information, education and communication	25	0.71	0.71	1.60	0.411
	50	2.64	2.57	2.80	
	75	2.94	3.85	4.25	
Training arrangements	25	1.62	1.25	2.62	0.069
	50	3.62	3.00	4.00	
	75	4.62	3.00	5.00	
Monitoring, evaluation and research	25	3.70	3.40	4.55	0.009
	50	4.30	3.80	5.00	
	75	4.85	4.40	5.00	

Under obstetric care, the median for hospital C was 4.77, significantly higher than hospitals A and B, $p=0.005$. Under ANC, the median for A was 3.60, significantly lower

than hospitals B and C, $p=0.044$. Under staff training arrangements the median for C was significantly higher than hospitals A and B, $p=0.069$.

4.4 DATA ANALYSIS

4.4.1 Overall performance of the three hospitals combined

The results were analysed using non-parametric statistical test due to the sample size and non- Gaussian distribution of the data. The results indicate that under overall obstetric care the highest rating of 73.4% is for performance of blood transfusions. The ratings for overall obstetric care show weak to partial effort. The results therefore suggest the need to improve all the aspects of obstetric care. Particularly to improve adequate antibiotics supplies (48.6%), ability to perform manual removal of placenta (51.4%) and quick transportation arrangements to move a woman with obstructed labor (51.4%); and management of postpartum haemorrhage cases rating (57.1%). This finding is in keeping with the recommendation by WHO, that the skilled birth attendant should be able to perform vacuum or forceps extraction, vacuum aspiration for incomplete abortion, and symphysiotomy for obstructed labour cited in Adewemimo et al (2014:8). WHO, further advocate that the skilled birth attendant must be able to manage normal labour and delivery, perform essential interventions, start treatment and supervise the referral of mother and baby for interventions that are beyond their competence or not possible in a particular setting cited in Darmstadt et al (2009:91). Factors related to adverse events in the maternity units can broadly be grouped into two, that is, health system related factors and patient related factors. Knight et al (2013:1) indicate that in the wider global health context, there is a growing body of literature on the impact of different health system interventions on health services quality, utilisation and outcomes. The WHO describes six “building blocks” for strengthening health systems: service delivery, health workforce, information, medicines, financing and governance (Knight et al 2013:1). The WHO (2014:15), South Africa (2010:3-4), Archibong and Agan (2010:2) and Sandin-Bojo et al (2012:880) also indicate that obstetric haemorrhage continues to be the most common avoidable cause of maternal death. A cost-effectiveness study analysis conducted by Goldie et al (2010:10) reveal that early intensive efforts accompanied by a systematic stepwise effort to scale up intra-partum and emergency obstetric care, could reduce maternal mortality by 75%. Knight et al (2013:2) indicate that ‘supply-side’ barriers (for example,

difficulties in procuring essential drugs, vacuum aspirator pumps) are often major factors contributing to maternal deaths in developing countries. Strengthening health system effectiveness is one of the priorities in the Free State Province, including drug availability and its maintenance as indicated in the Department of Health (South Africa 2014:41). MDG Report (South Africa 2013:76), Harris et al (2011:302), Prata et al (2011:82), Department of Health Fezile Dabi Health District Plan 2014/2015 (South Africa 2014:13) also indicate that poor transport facilities, inter-facility transportation and lack of proper health care facilities are some of the factors that hinder progress in reducing maternal mortality. Knight et al (2013:5) indicate that distances between facilities can often be great and the roads themselves poor. In a systematic review by Knight et al (2013:5) eight articles mention difficult journeys mothers undergo when referred to higher levels of care. One article described the regional hospital as about 2 hours away on paved roads. It was also noted that communication between facilities can be sub-standard. Five articles stated that communication was an issue because of non-functioning radios and telephones or a complete lack thereof (Knight et al 2013:5). The Fezile Dabi District also considers strengthening the health system effectiveness by improving information, communication, technology and health information systems through making sure that all facilities have adequate information technology support (South Africa 2014:40).

Under overall antenatal care of the three hospitals combined the results indicate that the ability to receive iron tablets for anemia and TB examination and treatment both rate the highest (88.6%). The ratings for overall obstetric care show weak to partial effort. The results therefore suggest the need to improve all aspects of ANC. There is particularly a need to improve patient protection by insecticide-treated nets that obtained the lowest ranking of (14.3%); intermittent preventative treatment for malaria (20%) and patient examination for malaria (25.7%). Secondly, improvement on the ability to receive psycho-social referrals (45.7%), patient examination for malnutrition (48.6%) and patient information about the danger signs of obstetric and newborn complications (57.1%). Hirose et al (2011:1003), Sandin-Bojo et al (2012:881), Karkee et al (2014:2) highlight that pregnancy-related factors such as awareness, health knowledge of pregnancy and risks and the importance given to pregnancy. Karkee et al (2014:2) and Manithip et al (2013:195) further indicate that women who are informed, perceive the need for professional help and recognise the risk of pregnancy and delivery, are expected to make antenatal visits and prepare and arrange for childbirth. Raven et al (2012:681)

indicate that policy makers and programme managers need to be cognisant of the fact that a key determinant of acceptance and sustained use of health services is women's own views on the quality of these services. Free State (FS) Department of Health (South Africa 2014:83) indicate poor attendance of antenatal visits before 20 weeks. Fezile Dabi Health District Plan (2014/2015 (South Africa 2014:91) indicate that the district is not a malaria area; however from time to time there are the so called imported cases from certain endemic malaria areas in South Africa. Therefore there is no budget allocation for malaria in the Fezile Dabi District. Carolan (2010:407) indicates that sub-Saharan migrants suffer from a range of disorders including malaria which contributes to severe levels of anaemia. Carolan (2010:409) states that however, less is known about the incidence of malaria among refugee communities in host countries. A study by Fenwick et al (2010:11) indicate that lack of emotional care by midwives and revealed that psychosocial health of women was inconsistently assessed and argued that midwives needed further skill development in providing psychosocial care. Fenwick et al (2010:20) further advocate for policy and leadership direction in this clinical area. Asundep et al (2013:280) and Chauhan (2012:617) indicate that antenatal care is a period during which a variety of services are offered including prophylaxis and micronutrient supplementation are provided, these measures have been shown to be effective in improving pregnancy and neonatal outcomes. The perspective and experience of service users and patients are taking centre stage across a variety of national health care services, including maternity care.

Overall intra-partum care, the results indicate that the highest rating is for examination of hypertension, anaemia and infection (80%). Although all the aspects of intra-partum care showed above average performance, the findings still suggest the need to improve all the aspects of intra-partum care. Knight et al (2013:1) indicate that the majority of maternal deaths are clustered around labour, delivery and the 24 hours postpartum. There is a need to improve monitored labour and check-up within 48 hours post-delivery (both 68.6%). The presence of a trained attendant at birth for the three hospitals combined, received an overall rating of 77.1%, but areas of improvement are still crucial as indicated by Adewemimo et al (2014:8). Goldie et al (2010:10) and Beaves et al (2007:96-97) indicate that many hospital studies of maternal mortality show that 10% or more of deaths occur within the first hour of arrival and another 30-50% within 24 hours indicating the role that delayed or lack of referral to essential obstetric care can play. Fort (2012:89) suggests that policies should be put in place to

ensure that even if a skilled attendant cannot be present at delivery, a specified level and timing of care to be provided promptly after childbirth for both the woman and the newborn should be agreed upon and recommendations drawn up on how to achieve this, in order to reduce the continuing high levels of intra-partum and postpartum maternal and neonatal mortality. Kakyo et al (2012:379) reveal that in the rural district of Uganda, there was a challenge for midwives working in rural settings of developing countries. Harris et al (2011:302) also reveal that the skills required for rural practice differed from the skills needed by their urban-based counterparts. Skills are needed for practicing maternity care in a rural context; and maintaining competence and confidence in these skills is essential.

Pertaining to overall postpartum care, the ratings for overall postpartum care show weak to partial effort. Follow-up and postpartum psycho-social referrals (the lowest ratings for care received 40%). Postpartum services that encompass both preventive and curative intervention packages rates the highest 62.9%. The results therefore suggest the need to improve all the aspects of postpartum care. Particularly the results suggest the need to improve 48-hour post abortion care, reviews, but areas of improvement are still crucial as suggested in a study by Fort (2012:81) that post-partum and post-natal care are key components of the “continuum of care” for maternal health. Sergurado and Paiva (2007:35) and Fenwick et al (2010:20) advocate for the resources in this area. Enache (2013:26) and Kakyo et al (2012:378) advocate for male involvement in postpartum care for women in order to ensure holistic management of postpartum depressive symptoms.

Regarding overall family planning, the ratings for family planning show weak to partial effort. The results indicate the highest rating for routine family planning at postpartum visits (77.1%). The results therefore suggest the need to improve all the aspects of family planning. Particularly there is a need to improve of sterilisation of males rates the lowest (22.9%), skilled staff to insert intra-uterine devices (34.3%), progestrin pill for breastfeeding women (48.6%) and regular availability of the contraceptive pill rates (51.4%). Ramkissoon et al (2010:36) indicate that the uptake of IUD has fallen and almost negligible and that It is rarely offered as few providers are trained in its insertion. Ramkissoon et al (2010:36) further indicate that lack of access to emergency contraception (EC) is a human right issue and revealed that sterilisation services are difficult to access. Sexual and Reproductive Health (SRH) needs and rights of men are

generally not addressed in the public sector health services. Male reproductive health services are largely absent in the public health sector as indicated by Ramkissoon et al (2010:40-41). Goldie et al (2010:10) reveal that that early intensive efforts to improve family planning and provide safe abortion could reduce maternal mortality by 75%.

The overall performance of the hospital protocols, the ratings show weak to partial effort. The results indicate the highest rating (71.4%) for adequate protocols towards pregnancy and delivery. The rest of the clinical interventions rates below average, showing a general poor performance under this strategy. The results therefore suggest the need to improve all aspects of hospital protocols. Particularly there is a need to improve frequent statements to the press and public on support improvements for save pregnancy and delivery (rated the lowest 20%), development of protocols through adequate consultation with other patients, women and private practitioners (40%). Secondly, improvement on vigorous implementation of protocols through regular high level reviews and action plans (45.7%), protocols towards treatment of complications of abortion and illegal abortions (45.7%). This study corroborates with other studies and re-enforces the need for a concerted action in addressing the persistent issues to better understand and address all the circumstances around maternal deaths, including further review of the impact that health systems and policies have on them (Chapman et al 2014:314-315). Harris et al (2011:302) argue that whereas the hospital-based midwives worked within a 'with institution' ideology (serving the pragmatic demands of dealing with large numbers of births when delivering high quality care), the community midwives adhered to a 'with woman' approach, centred on the needs of each woman rather than hospital protocols. Reproductive Health (2010:204), Raven et al (2012:681), Overgaard et al (2012:973-981) and Manithip et al (2013:201) advocate that pregnant women should be included in the research study population so that decisions are evidence-based. Programme managers and policy makers require more than a global review of effectiveness, or even cost-effectiveness, to decide which strategies and specific interventions will be the most successful in their context. The local epidemiology (mortality rates, causes and risk factors), as well as health system design and performance, financing, and community demand are key factors to consider as indicated by Lawn et al (2009:133).

Under overall combined for information, education and communication strategy, the results indicate general poor performance. The results therefore suggest the need to

improve all the aspects of this strategy. The highest rating is 45.75% for supplies of adequate educational materials to instruct patients about safe practices. The results suggest the need to improve the following: mass media usage to educate the public about harmful home practices for pregnancy, delivery and postpartum care and mass media campaigns for information regarding pre-existing ill health as a risk factor in maternal health (both rates 11.4%). Secondly, improvement on mass media usage to educate the public about symptoms of pregnancy complications (17.1%). Furthermore areas of improvement are crucial for maternal health education community mobilisation projects and sexual reproductive health education to high schools (20%) and community health workers (34.3%). Pagel et al (2009:1441) advocate for community-based interventions of maternal illness to complement a health-facility strategy. Awareness programmes should be targeted more on the consumers if the MDG 4 and 5 must be reached as indicated by Emmanuel, Gladys and Cosmas (2013:1). Bhutta et al (2008:972), Islam and Thorvaldsen (2012:15) and Asundep et al (2013:285) advocate for community mobilisation through support groups and mass-media strategies targeting communities and populations. Nineteen of twenty of systematic reviews by Bhutta et al (2008:975) conclude that mass media was effective. The Department of Health, Fezile Dabi Health District Plan 2014/2015 (South Africa 2014:13) indicate that health promotion must be improved and the district must go out on campaigns to ensure that all communities are reached and ensure that priority programmes receive the attention they deserve. Ramkissoon et al (2010:40) indicate that community interventions should be carefully monitored in view of their considerable costs. Darmstadt et al (2009:89-112) and the Department of Health, Fezile Dabi Health District Plan 2014/2015 (South Africa 2014:13, 31, 32-36) advocate for the use of community health workers to promote and intensification of school health services.

Reproductive Health Matters (2010:197-199) reports on a systematic review that was done on the effectiveness of community-based intervention packages for preventing maternal morbidity and mortality. The review did not find a significant reduction in maternal mortality across all studies, but did find a significant reduction across studies with low risk of bias. Significant reductions were observed in neonatal mortality, stillbirths and perinatal mortality. In a study conducted by Bhutta et al (2011:403-409) in a rural district of Pakistan to evaluate the effectiveness of a community-based intervention package, the findings reveal that key household behaviours for maternal and early newborn care improved, with evidence of improving trends over time for some

indicators. Bhutta et al (2011:403-409) argue that despite the success of these projects, translation of these interventions into packages of care and complex interventions that can be delivered within public health systems at scale remains a major challenge. He also indicated that most of these studies were fairly small and none principally used the public sector, making translation of this evidence to public health systems difficult (Bhutta et al 2011:403-409). Goldie et al (2010:13) advocate that more studies quantifying the benefits of community-level interventions on preventing maternal morbidity remain a priority.

Under overall combined for training arrangements strategy, the results also indicate general poor performance. The results therefore suggest the need to improve all the aspects of this strategy. The highest rating is midwife refresher training course for safe delivery and pregnancy within the last five years (54.3%). The results suggest the need to improve the training of newly hired midwives for safe pregnancy and delivery within six months and special in-service training of normal deliveries for newly hired doctors (rates lowest 25.7%). The results concur with the MDG Report (South Africa 2013:76), Reproductive Health Matters (2010:199-200), Knight et al (2013:2), Narchi (2011:23) and Manithip et al (2013:1958) indicate that lack of appropriately trained staff is responsible for an inability to follow standard procedures and poor initial assessment and diagnosis are some of the factors that hinder progress in reducing maternal mortality. In a systematic review by Knight et al (2013:3), there is several accounts of inadequate staff training resulting in fatalities or near-miss events. Other studies report that educational opportunities for health workers were overwhelmingly deficient due to the absence of continuing education programmes, adequate formal training and a habit of self-learning, as well as poor access to up-to-date educational resources (Knight et al 2013:3). Hofmeyer et al (2009:33) add that educational tools for training courses and drills may include formal classroom lectures, internet modules, computer-based simulations, model-based simulations with medical equipment, and real-time observed experiences on the maternity ward. Darmstadt et al (2009:92) argue that while there is a core skill set for SBAs defined by WHO, the training and competency of SBAs in using these core skills varies substantially between settings and countries.

Under overall monitoring, evaluation and research strategy, the ratings show weak to partial effort. The results indicate the highest rating of 80% for regular procedure of reviewing and learning from every case of maternal death in the facility. The finding

suggest the need to improve routine statistical system for provision of good periodic information on supplies, personnel, deliveries, caesarian sections and cases of complications and monitoring and analysis of results from routine statistics by management staff (both rate the lowest 48.6%). Monitoring and research capabilities received relatively high ratings, but there are still areas that need improvement. Particularly, data quality and data management as indicated in the FS Department of Health, Fezile Dabi Health District Plan 2014/2015 (South Africa 2014:41). Issues relating to poor policy at the level of the individual facility (for example poor record keeping) were reported in 14 articles in a systematic review conducted by Knight et al (2013:3).

Bhutta, Robert and Black (2013:2229) reveal that there are “causes of the causes” when dealing with the burdens of maternal morbidity and mortality. Social determinants of health are the conditions in which people are born, grow, live, work, and age; these circumstances are shaped by the distribution of money, power and resources at global, national, and local levels cited in Bhutta et al (2013:2229). Asundep et al (2013:280), Narchi (2011:23), Couillet, Serhier, Tachfouti, Elrhazi, Neijjari and Perez (2007:688-694) and Knight et al (2013:6) suggest that when strategies are developed to reduce adverse events in maternity, socio-demographic profiles of patients who are involved should be taken into considerations especially in rural areas. For example, societal norms, such as taboos around sex and a lack of confidentiality, may also discourage women and girls from seeking needed health care services. Particularly, if they are of a sensitive nature, companionship during labour because of concerns about witchcraft, privacy and gossip. Other factors include family planning, HIV testing, administration of peripartum antiretroviral treatment or treatment of sexually transmitted infections (Couillet et al 2007:688-694; Knight et al 2013:6). Although antenatal services may be available, it is not utilized by the patients due to poor socio-economic status and culture (Jat et al 2011:8). Religion and cast showed considerable influences on the use of ANC, safe delivery services and biomedical services (Jat et al 2011:9; Knight et al 2013:6). Archibong et al (2010:6) also reveal that social causes of maternal deaths include, delayed referrals from place of initial labour. This problem is compounded by the activities of Pentecostal churches and ‘faith healers’ who now conduct deliveries of their members in their churches. Faith healers have spiritual explanations for all normal and abnormal physiological and structural states, particularly as related to pregnancy and labour. They contribute immensely to antenatal defaulting as well as negative

perception towards medical care. Many of these churches manage emergency obstetric cases only to send them to the hospital to die when they are moribund. The spiritual belief of people has a serious impact on their health seeking behaviour (Archibong et al 2010:6). Multi-gravidity was cited as one of the reason for non-utilisation, which might be linked to increased domestic workload (Jat et al 2011:4.) This is supported by a study conducted in Barkina Faso (Meda et al 2008:68-72). Koblinsky and Kureshy (2009:90), Yar'zever and Said (2013:2-8) and Jat et al (2011:2) indicate that education, poverty, traditions, and the environment (e.g. urban or rural; desert or watery; high or low density of population) are keys to understanding the community-level contextual fabric that cushions a safe motherhood programme. The health and well-being of mothers and their children can be negatively influenced by their socio-economic conditions and their families as indicated by Jat et al (2011:4-6). Findings from these studies suggest that patient related factors might play an important role in avoidance of adverse events in the maternity units and they should be studied simultaneously with health system factors.

4.4.2 The frequency comparisons of the three hospitals and the group medians

Under obstetric care, the management of postpartum haemorrhage cases (76.2%) and intravenous administration of antibiotics (81%) for hospital C is significantly higher than hospitals A and B, $p=0.031$. The manual removal for retained placenta for hospital B is significantly lower 14.3% than hospitals A and C, $p=0.002$. Quick transportation arrangements to move a woman with obstructed labor for hospital C is significantly higher than hospitals A and B, $p=0.020$.

Under ANC, examination and treatment for hypertension for hospital A is significantly lower (50%) than hospitals C and B, $p=0.019$. Informing patients about the danger signs of obstetric and newborn complications is significantly higher for hospital B 71.4% than hospitals C and A, $p=0.050$. Ability to receive psycho-social referrals and treatment for hospital B hospital is significantly higher (71.4%) than hospitals C and A, $p=0.099$. Monitored labour for hospital A is significantly lower than hospitals C and B, $p=0.070$.

Under postpartum care and family planning strategies, there is no significant differences between the three hospitals, $p>0.05$. Under information, education, communication strategy, adequate educational materials supplies by the hospital to instruct patients

about safe practices is significantly lower for hospital A than hospitals C and B, $p=0.000$. Community mobilisation projects for hospital A is significantly lower than hospitals B and C, $p=0.020$. Under training arrangements for the staff, training for safe pregnancy and delivery care within the first six months for newly hired midwives and nurses is significantly lower for hospital B than hospitals A and C, $p=0.014$. Under monitoring, evaluation and research, provision of good periodic information on supplies, personnel, deliveries, caesarian sections and cases of complications by a routine statistical system for hospital C is significantly higher than hospitals A and B, $p=0.012$. Systematic use of statistical information for decisions and reconsideration of strategies for reducing maternal mortality by management for hospital C is significantly higher than hospitals B and A, $p=0.014$.

Under obstetric care, the median for hospital C is 4.77, significantly higher than hospitals A and B, $p=0.005$. Under ANC, the median for hospital A is 3.60, significantly lower than hospitals B and C, $p=0.044$. Under training arrangements the median for hospital B is significantly lower than hospitals A and C, $p=0.009$. The performance of hospital A is relatively lower than hospitals B and C; this could have been influenced by the small sample size. Hospital C performed relatively higher than hospital A and hospital B, it is a regional hospital and the sample size was relatively bigger than the two hospitals.

4.5 CONCLUSION

Chapter 4 presented the data management and the results from a cross-sectional descriptive study that used the MNPI self-administered questionnaire. The next chapter outlines the summary and interpretation of research results, recommendations, contributions to the study, limitations to the study and concluding remarks.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter outlines the summary, interpretation and the conclusion of the research results. It also outlines the recommendations to the Strategic Management team of the three hospitals and the Provincial Department of Health. The recommendations will help to inform policy, practice and provide organisational skills that will be useful for health professionals and managers working to improve the quality of care and will stimulate quality awareness among providers of maternal and neonatal health care. The chapter further outlines the limitations of the study and the concluding remarks.

5.2 SUMMARY AND INTERPRETATION OF RESEARCH RESULTS

The MNPI ratings, collected in the three hospitals of the Fezile Dabi District, indicate that programme efforts for maternal health are similar across hospitals, but there are particular areas in each hospital that need more attention. Maternal health programmes in these hospitals have come a long way but efforts should not stop there. The ratings generally show weak to partial effort, but there is still room for improvement. General poor performance was noted under the following strategies: postpartum care, training arrangements, information, education, communication and hospital protocols.

5.2.1 Obstetric care

Obstetric care (rates between 48.6% and 74.3%), show an urgent need to improve the quality of these crucial services; particularly management of haemorrhage cases, transportation arrangements and antibiotics supply.

5.2.2 Antenatal care

ANC (rates between 14.3% and 88.6%), indicating an urgent need to improve information given to women about danger signs of pregnancy, assessment for malnutrition and psycho-social care. There is also a need to consider budget for malaria for the immigrants as malaria is a very fatal disease.

5.2.3 Intra-partum care

Intra-partum care (rates between 68.6 and 80%), indicates an urgent need to improve the quality of these crucial services. Banchani and Tenkorang (2014:7) state that the high level of maternal mortality in the developing world in the midst of the numerous policies and interventions is a manifestation of what may be lacking in the implementation process. Policies, even when adopted, do not automatically translate into quality services at the local level.

5.2.4 Postpartum care

Postpartum care (rates between 40% and 62.9%), indicates a need to improve the quality of post-abortion care reviews and psycho-social referrals for postpartum and post-abortion depression treatments.

5.2.5 Family planning

Family planning services (rates between 22.9% and 77.1%) calls for a need to improve regular availability of contraceptives, skilled staff for insertion of intra-uterine devices and male sterilisation services.

5.2.6 Hospital protocols

Another area that is in need of attention is hospital protocols (rates between 20% and 71.4%) there is a need to improve the quality of these services. Favourable policies are common in many countries but implementation lags behind. The district and hospitals management needs to ensure that good intentions are translated into high quality, accessible services and programmes at the local level.

5.2.7 Health information, education and communication

Health promotion is another area that is in need of immediate attention (rates between 11.4% and 45.7%) showing a generally poor performance. It is imperative that information about health care issues reaches people at all levels in the community. Health promotion and education of the public are important adjuncts to the provision of health services. Mass media should be used to educate the public about safe pregnancy and delivery. Community-based organisations should assist these efforts through systematic programmes.

5.2.8 In-service training arrangements

The education and training of health professionals is an integral part of providing good quality care and preventing maternal disability and death. The Fezile Dabi District's performance is not satisfactory (ratings are between 25.7 and 54.3), actual training need improvement and further development.

5.2.9 Monitoring, evaluation and research

The monitoring, evaluation and research strategy rates (between 48.6% and 80%), indicates a need to improve these services, particularly good periodic information on supplies, personnel, deliveries, caesarian sections and cases of complications rates the lowest (48.6%). The monitoring and analysis of the results from routine statistics by management staff rates 48.6%.

5.3 RECOMMENDATIONS

Sandin-Bojo et al (2012:880) indicate that quality of care is often measured by maternal and child morbidity and mortality especially in developing countries, while assessments of the process of care given at different facilities are less common. However, such assessments are important, since the care in health centres and hospitals should be evidence based and of good quality to encourage women to seek maternal care.

Attention should be given to the improvement of the quality of the following:

- Adequate training on obstetric life-saving skills, management of haemorrhage cases, transportation arrangements and antibiotics supplies.
- Informing patients about danger signs of obstetrics, patient examination for malnutrition and psycho-social treatment.
- Intra-partum care, there is an urgent need to improve the quality of these crucial service, this must serve as a motivation and build the capability of the health care provider. For MDG 5 to be achieved, women in labour should be attended by skilled personnel with an improved antenatal care coverage and contraceptive prevalence rate. It is however important that increased coverage with care is matched with improved quality of outcomes care in order to really influence health care (Raven et al 2012:682).
- Hospital audits, data quality, data management and feedback methods need improvement in order to achieve and maintain high quality performance of the strategies implemented.
- Joint effort should be made by the community and the government to promote boys and girl's health education.
- Men should be sensitised on maternal health services, importance of their approval for women to seek care and also encourage their involvement in maternal health services. Male involvement is important as men stand as the gatekeeper to female reproductive health, strengthening health system and increasing community involvement and participation (Adewemio et al 2014:12). Improvement of quality contraceptive methods, increasing male involvement in sexual and reproductive health issues and services e.g. availability of male sterilisation services.
- Health promotion, community education and raising community awareness are important factors for reducing maternal morbidity and mortality.

- Supportive training for personnel should be improved.
- Overall birth experience is an important outcome of birth, further research studies of psycho-social birth outcomes and women’s perspectives on care must be done to evaluate and develop maternity care services as suggested by Overgaard et al (2012:973-981).
- The perspective and experience of service users and patients are taking centre stage across a variety of national health care services, including maternity care. The study conducted by Manithip et al (2013:681) reveal that participation from all levels of health care including community was emphasised by the respondents as a means of improving the maternal health care services, for example women’s experience of maternal health care services. This is yet another area for further research.
- A further study is required including the community health centres where “routine” antenatal care is offered.

5.4 CONTRIBUTIONS OF THE STUDY

- The results of this study will assist in programme planning and selection of appropriate and timely intervention. The Strategic Management Team of the three hospitals and the district can use the results of the study as empirical evidence of the actual results and implement strategies that will further reduce the maternal mortality rate.
- Provincial Department of Health – the results of the study are province specific and can be used as a benchmark for other regional or district hospital in the province.
- Hospitals A, B and C and Fezile Dabi District Strategic Management team can use the results of the study to inform policy, practice and organisational skills; that will be useful for health professionals and managers working to improve the

quality of care and will stimulate quality awareness among providers of maternal and neonatal health care.

5.5 LIMITATIONS TO THE STUDY

- The study is an informed survey; this might have led to over/underrating of the questionnaire by the study participants.
- Hospital C does not offer family planning and district hospitals offer high-risk ANC, low risk antenatal care is offered at the community health care centres and the results should therefore be interpreted within the context of these limitations.
- Non-random sampling was chosen and the five community health care centres (that also offer maternal health care) were not included due to time, finance and logistical constraints and therefore the sample size was small. The level of representativeness is questionable in non-random sampling; and inferences can consequently not be made about the study population.
- The sample size for hospital C was larger than hospitals A and B.

5.6 CONCLUSION

Chapter 5 presented the summary, interpretation and the conclusion of the research results. It also outlined the recommendations to the Strategic Management team of the three hospitals, the district and Provincial Department of Health. The chapter also addressed the contributions that the study made towards the three hospitals in the Fezile Dabi District, Free State Province. The limitations of the study and the concluding remarks are outlined.

5.7 CONCLUDING REMARKS

This study described and evaluated clinical strategies used to reduce maternal mortality in the Fezile Dabi District of the Free State Province.

Based on the study results, the quality of maternal health care needs to be improved. There is a need to improve all the clinical interventions of each strategy. The researcher assumes that results gained from the research are representative of the Fezile Dabi District. The results do provide valuable insight into the nature of maternal mortality reduction strategies in the district. Furthermore, will help to contribute to the debate on how the district might design and implement models of maternal mortality reduction strategies that would meet women's individual needs during their transition to motherhood. The results might have been more nuanced if information on evaluation of maternal health care strategies included the community health care centres, this requires a further study.

The reproductive health represents a healthy physical and mental condition but also the psychosocial wellbeing in all respects concerning the reproduction system, its functions and processes (Enache 2013:264). This analysis, reflecting one district's experience, provides strong evidence that health authorities should prioritise inter-hospital transport vehicles within their budgets. Also, to ensure access of the pregnant population to appropriate care and, where feasible, to assign dedicated vehicles to maternity transfers as suggested by Schoon (2013:534). Pathways to maternal death complications (e.g. haemorrhage and infection), policies should include prompt attendance and management including abortion complications, also at the community level as suggested by Fort (2012:81-92).

Health care promotion programmes to improve maternal health must be supported by strong policies and implementation. In order to ensure safe motherhood, it requires recognizing and supporting the rights of women and girls to lead healthy lives in which they have control over the resources and decisions that impact on their health and safety. Programmes requires raising awareness of complications associated with pregnancy and childbirth, providing access to high quality health services (antenatal, delivery, postpartum, family planning, etc.), and eliminating harmful practices by encouraging healthy behaviours.

There must be adequate training of health care providers and logistical services that facilitate the provision of these programmes. Maternal programmes and policies quality must be improved and implemented for all women and girls, and ensure equal access to the full range of services. Efforts to reduce maternal mortality and morbidity must also

address societal and cultural factors that impact on women's health and their access to services (Couillet et al 2007:688-694; Meda et al 2008:68-72; Goldie et al 2010:10).

Socioeconomic and geographic inequalities also contribute to high maternal mortality as indicated by Liu et al (2010:4-6). Banchani et al (2014:4) indicate that the implementation of maternal health interventions should take into consideration the environment under which the interventions are implemented by health care providers to ensure that they are successful. The challenges emanating from maternal health care delivery in the health system indicate that human resources for health and logistics have a direct bearing and influence on the way maternal health interventions are implemented. To ensure that such interventions are successful, these issues need to be given priority in the implementation phase as stated by Banchani et al (2014:4).

Some strategies do not require the same level of infrastructure for example improving intra-partum care and increasing contraceptive options for limiting and spacing. Targeting these strategies toward rural areas with high fertility rates is a promising way to initiate equitable improvements in maternal health as suggested by Goldie et al (2010:10). Despite the limitations stated above, the research does provide valuable insight into the nature of maternal mortality reduction strategies in the district, and thereby will serve as a benchmark for future studies. Since the Fezile Dabi District in the Province has been identified as the district with poor performance on the achievement of maternal and child health targets, there is an urgent need to address the identified issues in order to achieve equity in women's access to high quality maternal health care with the aim of closing the identified gaps. The achievability of these strategies depends on available workforce, terrain, infrastructure, and political will as indicated by (Prata et al 2011:82).

The results can therefore not be generalised to the hospitals and health care centres in Fezile Dabi District. The results of this study suggest weak to partial effort of maternal strategies implemented in the Fezile Dabi District and should be taken with some caution considering the limitations stated above.

LIST OF REFERENCES

Adewemimo, AW, Msuya, SE, Olaniyan, CT & Adagoke, AA .2014. Utilisation of skilled birth attendance in Northern Nigeria: A cross-sectional survey. *Midwifery* 30:7-13.

Ahmed, S, Li, Q, Liu, L & Tsui, AO. 2012. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet* 380:111-125.

Archibong, EI & Agan, TU. 2010. Review of policies and programs for reducing maternal mortality and promoting maternal health in Cross River State, Nigeria. *African Journal of Reproductive Health* 14(3):82-92.

Asundep, NN, Carson, AP, Turpin, CA, Tameru, B, Agidi, AT, Zhang, K & Jolly, PE. 2013. Determinants of access to antenatal care and birth outcomes in Kumasi, Ghana. *Journal of Epidemiology and Global Health* 3:279-288.

Banchani, E & Tenkorang, EY. 2014. Implementation challenges of maternal health care in Ghana: the case of health care providers in the Tamale Metropolis. *BMC Health Services Research* 14:1-10.

Beaves, M, Jenkins, V & Wallace, M. 2007. A survey of intrapartum fetal surveillance education practices in Victorian public hospitals. *Journal of Obstetrics and Gynaecology* 47:94-100.

Bhutta, ZA, Ali, S, Cousens, S, Ali, TM, Haider, BA, Rizvi, A, Okong, P, Bhutta, SZ & Black, RE. 2008. Interventions to address maternal, newborn, and child survival: what difference can intergrated Primary Health Care strategies make? *Lancet* 372:972-989.

Bhutta, ZA, Soofi, S, Cousens, S, Mohammad, S, Memon, ZA, Ali, I, Feroze, A, Raza, F, Khan, A, Wall, S & Matines, J. 2011. Improvement of perinatal and newborn care in rural Pakistan through community-based strategies: a cluster-randomised effectiveness trial. *Lancet* 377:403-412.

Bhutta, ZA, Robert, E & Black, MD. 2013. Global maternal, newborn and child health — so near and yet so far. *The New England Journal of Medicine* 369(23):2226-2235.

Buchmann, E. [Sa]. *Maternal mortality and morbidity – still not right*. South Africa:1-6.

Bullough, C, Meda, N, Krystyna, Makowiecka, K, Ronsmans, C, Chadi, EL & Hussein, J. 2005. Review: Current strategies of reduction of maternal mortality. *An International Journal of Obstetrics* 112:1180-1188.

Burchett, HE & Mayhew, SH. 2009. Maternal mortality in low-income countries: What interventions have been evaluated and how should the evidence base be developed further? *International Journal of Gynecology and Obstetrics* 105:78-81.

Campbell, OMR & Graham, WJ. 2006. Strategies for reducing maternal mortality: getting on with what works. *Lancet* 368:1284-1299.

Carolan, M. 2010. Pregnancy health status of sub-Saharan refugee women who have resettled in developed countries: A review of literature. *Midwifery* 26:407-414.

Chapman, E, Reveiza, A, Sangalang, S, Manu, C, Bonfill, X, Munoz, S & Abalos, E. 2014. A survey study identified global research priorities for decreasing maternal mortality. *Journal of Clinical Epidemiology* 67:314-324.

Chauhan, A. 2012. Antenatal care among currently married women in Rajasthan, India. *Asian Pacific Journal of Tropical Disease*:617-623.

Couillet, M, Serhier, Z, Tachfouti, N, Elrhazi, K, Nejjari, C & Perez. 2007. The use of antenatal services in the health centers of Morocco. *Journal of Obstetrics and Gynecology* 27(7):688-694.

Dalton, VK, Xu, X, Mullan, P, Danso, KA, Kwawukume, Y, Gyan, K & Johnson, TRB. 2013. International Family Planning Fellowship Program: Advanced training in family planning to reduce unsafe abortion. *International Perspectives on Sexual and Reproductive Health* 39(1):42-46.

Darmstadt, GL, Lee, A, Cousens, S, Sibley, L, Bhutta, ZA, Donnay, F, Osrin, D, Bang, A, Kumar, V, Wall, SN, Baqui, A & Lawn, JE. 2009. 60 million non-facility births: Who can deliver in community settings to reduce intrapartum-related deaths? *International Journal of Gynecology and Obstetrics* 10:89-112.

Department for International Development. 2005. How to note: How to reduce maternal deaths: Rights and responsibilities.

DFID see Department for International Development.

Emmanuel, NK, Gladys, EN, Cosmas, UU. 2013. Consumer knowledge and availability of maternal and child health services: a challenge for achieving MDG 4 and 5 in Southeast Nigeria. *BMC Health Services Research*:1-5.

Enache, RG. 2013. 3rd World Conference on Psychology, Counselling and Guidance (WCPCG-2012). Psychological counselling and family planning for teenagers. *Social and Behavioral Sciences* 84:264-268.

Fenwick, J, Butt, J, Dhaliwal, S, Hauck, Y & Schmied, V. 2010. Western Australian women's perceptions of the style and quality of midwifery postnatal care in hospital and at home. *Science Direct* 23:10-21.

Ferreira, ACG, Souza, AI, Lima, RA & Braga, C. 2010. Choices on contraceptive methods in post-abortion family planning clinic in the North-East Brazil. *Reproductive Health* 7(1):1-5.

Fort, AL. 2012. Coverage of post-partum and postnatal care in Egypt in 2005-2008 and Bangladesh in 2004-2007: Levels, trends and unmet need. *Reproductive Health Matters* 20 (39): 81-92.

Fullerton, JT, Thompson, JB & Severino, R. 2011. The International Confederation of Midwives Essential Competencies for Basic Midwifery Practice. An update Study: 2009-2010. *Midwifery* 27:399-408.

Goldie, SJ, Sweet, S, Carvalho, N, Natchu, UCM, Hu, D. 2010. *Alternative Strategies to Reduce Maternal Mortality in India: A Cost-Effectiveness Analysis*. PLoS Medicine 7(4):1-17.

Harris, FM, Van Teijlingen, E, Hundley, V, Farrmer, J, Bryers, H, Caldow, J, Ireland, J, Kiger, A & Tucker, J. 2011. The buck stops here: Midwives and maternity care in rural Scotland. *Midwifery* 27:301-307.

Hirose, A, Borchert, M, Niksear, H, Alkozai, AS, Cox, J, Gardiner, J, Osmani, KR, & Filippi, V. 2011. Difficulties leaving home: A cross-sectional study of delays in seeking emergency obstetric care in Herat, Afghanistan. *Social Science and Medicine* 73:1003-1013.

Hofmeyer, GJ, Haws, RA, Bergstrom, S, CC Lee, AC, Okong, P, Darmstadt, GL, Mullany, LC, Oo, E & Lawn, JE. 2009. Obstetric care in low-resource settings: What, who and how to overcome challenges to scale-up? *International Journal of Gynaecology and Obstetrics* 107:21-45.

Hulton, LA, Matthews, Z & Stones, RW. 2007. Applying a framework for assessing the quality of maternal health services in urban India. *Social Science and Medicine* 64:2083-2095.

Hunt, P & De Mesquita, JB. [Sa]. *Reducing maternal mortality. The contribution of the right to the highest attainable standard of health*. Human Rights Centre. University of Essex.

Islam, MR & Thorvaldsen, G. 2012. Family planning knowledge and current use of contraception among the Mru indigenous women in Bangladesh: a multivariate analysis. *Open Access Journal of Contraception* (3):9-16.

Jat, TR, Ng, N & Sebastian, NS. 2011. Factors affecting the use of maternal health in Madhya Pradesh State of India: A multilevel analysis. *International Journal for Equity in Health*:1-11.

Joubert, GE & Ehrlich R. 2007. *Epidemiology: a research manual for South Africa*, edited by J Katzenellenbogen and SA Karim. 2nd edition. Cape Town. Oxford University Press.

Kakyo, TA, Muliira, JK, Mbalinda, SN, Kizza, IB & Muliira, RS. 2012. Factors associated with depressive symptoms among postpartum mothers in a rural district in Uganda. *Midwifery* 28:374-379.

Karkee, R, Lee, AH & Vishnu, K. 2014. Need factors for utilisation of institutional delivery services in Nepal: An analysis from Nepal demographic and health survey, 2011. *Biomedical Journal*:1-7.

Knight, HE, Self, A & Kennedy, SH. 2013. Why are women dying when they reach hospital on time? *A systematic review of the 'Third Delay'* 8(5):1-9.

Koblinsky, M & Kureshy, N. 2009. Safe Motherhood Case Studies: Learning with Stakeholders in South Asia — An Introduction. *Journal of Health, Population and Nutrition* 27(2):89-92.

Lawn, JE, Kinney, M, Lee, A, Chopra, M, Donnay, F, Paul, VK, Bhutta, ZA, Bateman, M, Darmstadt, GL. 2009. Reducing intrapartum-related deaths and disability: Can the health system deliver? *International Journal of Gynecology and Obstetrics* 107:123-142.

Liljestrand, J. 2000. Strategies to reduce maternal mortality worldwide. *Current Opinion Obstetric and Gynecology* 12:513-517.

Liu, X, Yan, H & Wang, D. 2010. The evaluation of "Safe Motherhood" program on maternal care utilization in rural western China: a difference in difference approach. *Biomed Central Public Health*:1-6.

Manithip, C, Edin, K, Sihavong, A, Wahlstrom, R & Wessel, H. 2013. Poor quality of antenatal care services — is lack of competence and support the reason? An observational and interview study in rural areas of Lao PDR. *Midwifery* 29:195-202.

Meda, N, Houton, S, De Bouwer, V, Sombie, I & Byass, P. 2008. From evaluating a skilled care initiative in rural Burkina Faso to policy implications for safe motherhood in Africa. *Journal of Tropical Medicine and International Health* 13(1):68-72.

Narchi, NZ. 2011. Exercise of essential competencies for midwifery care by nurses in Sao Paulo, Brazil. *Midwifery* 27:23-29.

Odhiambo, A. 2011. *Stop making excuses: Accountability for maternal health care in South Africa*. Human Rights Watch.

Overgaard, C, Fenger-Grøn, M & Sandall, J. 2012. The impact of birthplace on women's birth experiences and perceptions of care. *Social Science and Medicine* 74:973-981.

Pagel, C, Lewycka, S, Colbourn, T, Mwansambo, C, Meguid, T, Chiudzu, G, Utley, M & Costello, AML. 2009. Estimation of potential effects of improved community-based drug provision, to augment health-facility strengthening, on maternal mortality due to post-partum haemorrhage and sepsis in sub-Saharan Africa: an equity-effectiveness model. *Lancet* 374:1441-1448.

Patil, CL, Abrams, ET, Klima, C, Kaponda, CPN, Leshabari, SC, Vonderheid, SC, Kamanga, M & Norr, KF. 2013. Centering Pregnancy-Africa: A pilot of group antenatal care to address millennium development goals. *Midwifery* 29:1190-1198.

Prata, N, Passano, P, Rowen, T, Bell, S, Walsh, J & Potts, M. 2011. Where there are (few) skilled birth attendants. *Journal of Health, Population and Nutrition* 29(2):81-91.

Polit, DF & Beck, CT. 2008. *Nursing research: generating and assessing evidence for nursing practice*. 8th edition. Philadelphia: JB Lippincott.

Rahmani, AM, Wade, B, Riley, W. 2013. Evaluating the Impact a Proposed Family Planning Model would have on Maternal and Infant Mortality in Afghanistan. *The International Journal of Health Planning and Management*:1-6.

Ramkissoon, A, Searle, C, Burns, C, Beksinska, M. 2010. *Sexual and reproductive health rights*. Department of Obstetrics and Gynaecology. University of Witwatersrand. South Africa.

Raven, JH, MCommh, RM, Tolhurst, RJ, Tang, S & Van den Broek, N. 2012. What is quality in maternal and neonatal health care? *Midwifery* 28:676-683.

Reproductive Health Matters. 2010. Round-up maternal health and maternal mortality *Reproductive Health Matters* 18(36):197-205.

Sandin-Bojo, AK, Hashimoto, M, Kanal, K & Sugiura, Y. 2012. Intrapartum care at a tertiary hospital in Cambodia: A survey using the Bologna Score. *Midwifery* 28:880-885.

Schoon, MG. 2013. Impact of the inter-facility transport on maternal mortality in the Free State Province. *South African Medical Journal* 103(8):534-537.

Sergurado, AC & Paiva, V. 2007. Rights of HIV people to sexual and reproductive health: Parenthood. *Reproductive Health Matters* 15(29):27-45.

South Africa. 2007. *Saving Mothers 2005-2007. Fourth Report on Confidential Enquiries into Maternal Deaths in South Africa*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2010. *Saving Mothers 2008-2010. Fifth Report on Confidential Enquiries into Maternal Deaths in South Africa*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2011. *Sexual and Reproductive Health and Rights: Fulfilling our Commitments 2011–2021 and beyond Final Draft*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2013. *Millennium Development Goals Country Report*. Pretoria: Government Printer.

South Africa (Republic). Department of Health. 2014. *District Health Plan 2014/2015. Fezile Dabi District*. Free State Province: Government Printer.

South Africa (Republic). Department of Health. [Sa]. *South Africa's National Strategic Plan for a campaign on accelerated reduction of maternal and child mortality in Africa (CARMMA). South Africa cares: No Woman should Die While Giving Life*. Pretoria: Government Printer.

Thomson, G, Dykes, F, Singh, G, Cawley, L & Dey, P. 2013. A public health perspective of women's experiences of antenatal care: An exploration of insights from a community consultation. *Midwifery* 29 (2013):211-216.

UNO. 2008. *The Millennium Development Goals Report*. New York: United Nations.

Wabiri, N, Chersich, M, Zuma, K, Blaauw, D, Goudge, J & Dwane, N. 2013. Equity in Maternal Health in South Africa: Analysis of Health Service Access and Health Status in a National Household Survey. *Plos One* 8(9):1-12.

Wikipedia. The Free Encyclopedia. [Sa]. Sv "evaluation".

From: <http://en.wikipedia.org/wiki/Evaluation> (accessed 12 May 2012).

Wikipedia. The Free Encyclopedia. [Sa]. Sv "maternal health care".

From: http://en.wikipedia.org/wiki/Maternal_health (accessed 12 May 2012).

Wise, A & Clark, V. 2010. Challenges of major obstetric heamorrhage. *Best Practice and Research Clinical Obstetrics and Gynaecology* 24:353-365.

World Bank. 2009. *Reducing maternal mortality, strengthening the World Bank response*.

From:

<http://siteresources.worldbank.org/INTPRH/Resources/ImprovingMaternalHealth.pdf>
(accessed 12 May 2012).

World Health Organization. 2014. *Trends in maternal mortality: 1990 to 2013*. Geneva, Switzerland: WHO.

Yar'zever, IS & Said, IY. 2013. Knowledge and barriers in utilization of maternal health care services in Kano State, Northern Nigeria. *European Journal of Biology and Medical Science Research* 1:1-14.

Zureick-Brown, S, Newby, H, Chou, D, Mizoguchi, N, Say, L, Suzuki, E & Wilmoth, J. 2013. Understanding global trends in maternal mortality. *International Perspectives on Sexual and Reproductive Health* 39(1):32-41.

APPENDIX A

LETTER SEEKING CONSENT FROM THE DEPARTMENT OF HEALTH: FREE STATE

PO Box 1220
Kroonstad
9500

13/06/2013

Head of the Department
The Department of Health
Bloemfontein
9300

Dear Sir/Madam

REQUEST TO CONDUCT RESEARCH

I am currently studying Master of Public Health at UNISA. I am the principal investigator of a study whose primary goal is to improve maternal and child health. Developing countries including South Africa are faced with unacceptable high levels of maternal mortality. This has a negative impact on the performance of hospitals and the achievement of millennium development goals. **The Title of the study- strategies used to reduce maternal mortality in the Fezile Dabi District. The aim of the study is to evaluate strategies used to reduce maternal mortality in the Fezile Dabi District.** Structured questionnaires will be used to collect data from staff involved in the maternal health care (nurses, doctors, management-operational managers) on evaluation of strategies used to reduce maternal mortality Boitumelo Regional Hospital, Tokollo District Hospital and Metsimaholo District Hospital would be desirable sites for this research. If feasible, I would like to approach the nursing managers to be able to gather information for my research report. The results of the study will be utilised to make recommendations to the District manager about all gaps or challenges in the implementation of a safer maternal health programme in the hospitals .The results will hopefully be used by Province and the District to review some systems and ensure improved quality and safety in patient care at maternity units.

NS Wageng

APPENDIX B

LETTER SEEKING CONSENT FROM MANAGEMENT OF HOSPITALS A, B AND C

PO Box 1220
Kroonstad
9500

13/06/2013

The Chief Executive Officer
Boitumelo Hospital
Private Bag X47
Kroonstad
9500

Dear Sir/Madam

REQUEST TO CONDUCT RESEARCH

I am currently studying Master of Public Health at UNISA. I am the principal investigator of a study whose primary goal is to improve maternal and child health. Developing countries including South Africa are faced with unacceptable high levels of maternal mortality. This has a negative impact on the performance of hospitals and the achievement of millennium development goals. **The Title of the study- strategies used to reduce maternal mortality the Fezile Dabi District. The aim of the study is to evaluate strategies used to reduce maternal mortality in the Fezile Dabi District.** Structured questionnaires will be used to collect data from staff involved in the maternal health care (nurses, doctors, management-operational managers) on evaluation of strategies used to reduce maternal mortality

Boitumelo Regional Hospital would be one of the three desirable sites for this research. If feasible, I would like to approach the nursing manager to be able to gather information for my research report. The results of the study will be utilized to make recommendations to the District manager about all gaps or challenges in the implementation of a safer maternal health programme in the hospital .The results will hopefully be used by Province and the District to review some systems and ensure improved quality and safety in patient care at maternity units.

NS Wageng.

APPENDIX C

INFORMATION FORM FOR THE STUDY RESPONDENTS

Dear Participant

My name is Ntsoaki Sandra Wageng and I am doing my Masters in Public Health at the University of South Africa. I am the principal investigator of a study whose primary goal is to improve maternal and child health. **The Title of the study- strategies used to reduce maternal mortality in the Fezile Dabi District. The aim of the study-To evaluate strategies used to reduce maternal mortality in the Fezile Dabi District.** Structured questionnaires will be used to collect data from staff involved in the maternal health care (nurses, doctors, management-operational managers) on evaluation of strategies used to reduce maternal mortality.

Of all the Millennium Development Goals (MDGs), the least progress has been made on MDG 5—reducing maternal mortality by three-quarters by 2015. Maternal mortality also comes with a high cost to the rest of society. Costs are both direct, involving mostly the cost of health care (either to families or to the health system), and indirect, in the form of income and productivity lost for both the mother and the family (child health, growth and education all suffer when mothers die) (World Bank 2009).

Despite the fact that South Africa's reproductive health policies and the laws that underwrite them are among the most progressive and comprehensive in the world in terms of the recognition that they give to human rights, including sexual and reproductive rights, it is of serious concern that the current level of maternal mortality in South Africa is far higher than the MDG target of 38 per 100 000 live births by 2015.

Self-administered questionnaire will be conducted. Participation is free. There will be no follow-up. You will be asked to complete and return the questionnaire to head nursing manager within two weeks. An appointment can be scheduled to come see you and help answer some of questions that might arise during the collection of information. You are kindly requested to sign the consent form at your first visit. You will then be requested to answer the questionnaire given to you. There will be no remuneration for your participation in the study. At the end of the study your results will be included as

data for statistical analysis and will be published. If you wish to have feedback with regard to the study results, they will be made available to you.

Confidentiality and anonymity will be maintained throughout the study and no personal details will be revealed. Participation in the study is voluntary and you are free to refuse to participate or withdraw your consent and to discontinue participation at any time. Such refusal or discontinuance will not affect your relationship with the department of health in any way.

APPENDIX D

CONSENT FORM FOR THE STUDY RESPONDENTS

I, the participant, have been fully informed of the procedure of the study. In signing this consent form, I agree to participate in the study and understand that I am free to withdraw my consent and discontinue with the study at any time. I understand that if I have any questions at any time, the researcher will answer them.

Date:

Signature (Participant):.....

I, the researcher, have fully explained the procedures and purpose of the study to the participant. I have asked if there are any questions and have answered them to the best of my ability.

Date:

Signature (Researcher):

082 642 5760

Supervisor: DR JM Mathibe-Neke

012 429 6524

APPENDIX E

MNPI SELF-ADMINISTERED QUESTIONNAIRE

Eighty-one MNPI Items

The Maternal and Neonatal Programme Effort Index (MNPI) is a research instrument designed to measure national efforts directed to improving the health of mothers and infants. It was applied first in 1999 for 49 developing countries, including the eight largest countries that account for two-thirds of the population of the developing world. It is based on an 81-item questionnaire with subdivisions for different components. Scoring of the questions is on a 0–5 scale, converted to a 0–100 percent range. The questionnaire is completed in each country by expert respondents drawn from various institutions and professional specialties.

QUESTIONNAIRE -To be completed by the participant

PARTICIPANT PROFILE FORM

RESPONDENT NAME:Hospital.....

DATE:

NUMBER OF YEARS RESPONDENT WORKED IN MATERNAL HEALTH UNIT.....

Occupation:Qualifications.....

Tel no: (H)..... (W)..... Cell.....

THANK YOU FOR YOUR ASSISTANCE WITH THIS RESEARCH

Questionnaire

Maternal and Neonatal Programme Effort Index (MNPI)

This questionnaire measures maternal and neonatal programme effort, which is the effort the hospital have put into the reduction of maternal mortality/morbidity conditions. It concerns strength of effort for programme inputs, not measures of outputs like maternal mortality rates or cases served.

INSTRUCTIONS:

Rate most items below between 0 and 5. Zero means the item is absent or extremely weak, and five means it is optimal. You can also think of each item as true or false – if it is fully true it receives a score of 5; if it is entirely false it receives a score of zero. Intermediate situations receive scores between zero and five. A few items ask for a percentage estimate. The numbers between 0 and 5 indicate partial effort. (For example, a score of 2 on the first item below would mean that some progress has been made for hospital treatment of haemorrhage cases but that the situation is still far from satisfactory.)

Just circle the number you choose for each item.

EVALUATION OF STRATEGIES TO REDUCE MATERNAL MORTALITY AT HOSPITAL A/HOSPITAL B/HOSPITAL C IN THE FEZILE DABI DISTRICT (FREE STATE PROVINCE).

THE HOSPITAL HAS SKILLED STAFF, IN PLACE, WHO CAN PROVIDE OBSTETRIC CARE:

1. Manage postpartum haemorrhage cases

Present effort 0 1 2 3 4 5

2. Administer antibiotics intravenously

Present effort 0 1 2 3 4 5

3. Perform manual removal of retained placenta

Present effort 0 1 2 3 4 5

4. Perform vacuum aspiration of the uterus, using MVA (manual vacuum aspiration) or an electric suction device

Present effort 0 1 2 3 4 5

5 Use a partograph to determine when to refer

Present effort 0 1 2 3 4 5

6. Have transportation arrangements to quickly move a woman with obstructed labour hospital

Present effort 0 1 2 3 4 5

7. Have adequate antibiotic supplies on hand (sufficient supplies of the correct types)

Present effort 0 1 2 3 4 5

8. Perform blood transfusions (and have adequate supplies of safe blood on hand)

Present effort 0 1 2 3 4 5

9. Perform Caesarean section or other operative delivery (e.g. forceps delivery or craniotomy)

Present effort 0 1 2 3 4 5

II. MATERNAL HEALTH SERVICES

Please indicate the degree to which each statement is true or false, using “0” to indicate “completely false,” and 5 to indicate “completely true,” and the numbers between to indicate partially true or false. (For example, a score of 2 on the first item below would mean that some progress has been made systematically checking for anaemia but that the situation is still far from satisfactory.)

AT ANTENATAL VISITS, ALL PREGNANT WOMEN:

1. Receive iron folate tablets for anaemia

Present effort 0 1 2 3 4 5

2. Are both examined for hypertension, and treated as needed?

Present effort 0 1 2 3 4 5

3. Are both examined for syphilis, and treated as needed?

Present effort 0 1 2 3 4 5

4. Receive needed tetanus injection (s)

Present effort 0 1 2 3 4 5

5. Are informed about danger signs of obstetric and newborn complications and are assisted in planning for any emergency

Present effort 0 1 2 3 4 5

6. Are offered voluntary counselling and testing for HIV and treated as needed

Present effort 0 1 2 3 4 5

7. Receive a urine test for asymptomatic bacteriuria and are treated as needed.

Present effort 0 1 2 3 4 5

8. Receive full IPT (Intermittent Preventive Treatment) for malaria

Present effort 0 1 2 3 4 5

9. Are protected by ITN (Insecticide-Treated Nets)

Present effort 0 1 2 3 4 5

10. Are examined for malaria and treated as needed.

Present effort 0 1 2 3 4 5

11. Are examined for TB and treated as needed.

Present effort 0 1 2 3 4 5

12. Are examined for diabetes mellitus and treated as needed.

Present effort 0 1 2 3 4 5

12. Are examined for malnutrition and treated as needed.

Present effort 0 1 2 3 4 5

14. Safe technologies for inducing safe abortion as needed.

Present effort 0 1 2 3 4 5

15. Able to receive psycho-socio referrals (for stress, depression, domestic violence) and treated as needed.

Present effort 0 1 2 3 4 5

DELIVERY – INTRAPARTUM

Please indicate the degree to which each statement is true or false, using “0” to indicate “completely false,” and 5 to indicate “completely true,” and the numbers between to indicate partially true or false. (For example, a score of 2 on the first item below would mean that some progress has been made for all deliveries but that the situation is still far from satisfactory.)

At delivery, all women:

1. Are attended by a professionally skilled attendant (either at home or in a facility)

Present effort 0 1 2 3 4 5

2. Have their labour monitored.

Present effort 0 1 2 3 4 5

3. Are checked for signs of hypertension, anaemia, or infection.

Present effort 0 1 2 3 4 5

4. Are able to receive emergency obstetric care as needed.

Present effort 0 1 2 3 4 5

5. Are provided an appointment for a check-up within 48 hours of delivery

Present effort 0 1 2 3 4 5

POSTPARTUM

Post-partum, all women

1. Post abortion care, reviews and follow-up services for patients as needed.

Present effort 0 1 2 3 4 5

2. Post-partum services that encompass both preventive and curative intervention packages as needed.

Present effort 0 1 2 3 4 5

3. Referrals for psycho-social services for post-partum and post-abortion depression as needed.

Present effort 0 1 2 3 4 5

FOR PROVISION OF FAMILY PLANNING

The hospital:

1. Routinely offer family planning after abortion cases

Present effort 0 1 2 3 4 5

2. Routinely offer family planning at postpartum visits

Present effort 0 1 2 3 4 5

3. Have contraceptive pill supplies regularly in stock

Present effort 0 1 2 3 4 5

4. Have progestin-only pill supplies for breast-feeding women

Present effort 0 1 2 3 4 5

5. Have skilled staff, in place, who can insert intra-uterine devices

Present effort 0 1 2 3 4 5

6. Can offer sterilization to female clients

Present effort 0 1 2 3 4 5

7. Can offer sterilization to male clients

Present effort 0 1 2 3 4 5

III. GENERAL SUPPORTING FUNCTIONS

Please indicate the degree to which each statement is true or false, using “0” to indicate “completely false,” and 5 to indicate “completely true,” and the numbers between to indicate partially true or false. (For example, a score of 2 on the first item below would mean that policies are only partly adequate.)

HOSPITAL PROTOCOLS TOWARD SAFE PREGNANCY AND DELIVERY

1. Protocols toward pregnancy and delivery services are adequate

Present effort 0 1 2 3 4 5

2. Protocols are developed through adequate consultation with interested parties such as other patients, private practitioners, women’s groups

Present effort 0 1 2 3 4 5

3. Protocols are reasonable and fair concerning which personnel can provide maternal health services (e.g. trained midwives can perform a wide range of medical procedures)

Present effort 0 1 2 3 4 5

4. Protocol exists toward the treatment of complications of abortions, including complications seen from illegal abortions

Present effort 0 1 2 3 4 5

5. Protocols are vigorously implemented through regular high-level reviews and updated action plans

Present effort 0 1 2 3 4 5

6. Senior managers in the hospital, issue frequent statements to the press and public to support improvements for safe pregnancy and delivery

Present effort 0 1 2 3 4 5

INFORMATION, EDUCATION, COMMUNICATION

1. The hospital uses the mass media to educate the public about symptoms of pregnancy complications and safe places for childbirth

Present effort 0 1 2 3 4 5

2. The hospital uses the mass media to educate the public about harmful home practices for pregnancy care, delivery, and postpartum care (home remedies and birthing customs, etc.)

Present effort 0 1 2 3 4 5

3. Hospital has mass media campaigns for information regarding pre-existing ill-health as a risk factor for maternal death and improvements in women's general health status.

Present effort 0 1 2 3 4 5

4. The hospital supplies adequate educational materials (posters, pamphlets, etc.) to delivery facilities to instruct clients about safe practices

Present effort 0 1 2 3 4 5

5. The hospital have community health workers to recognise early warning signs of pregnancy, risks and refer for further management.

Present effort 0 1 2 3 4 5

6. The hospital has community mobilisation projects relating to maternal health education and maternal health care.

Present effort 0 1 2 3 4 5

7. The hospital offer sexual reproductive health education to adolescents in High Schools for information regarding behaviour change.

Present effort 0 1 2 3 4 5

TRAINING ARRANGEMENTS

1. All midwives and nurses in hospital have received refresher training for safe pregnancy and delivery care within the last 5 years

Present effort 0 1 2 3 4 5

2. Doctors in hospital have received refresher training for safe pregnancy and delivery care within the last 5 years

Present effort 0 1 2 3 4 5

3. Newly hired midwives and nurses for hospital receive training for safe pregnancy and delivery care within the first 6 months

Present effort 0 1 2 3 4 5

4. Newly hired doctors receive special in-service training for normal deliveries

Present effort 0 1 2 3 4 5

MONITORING, EVALUATION, RESEARCH

1. A routine statistical system (using facility-based information) provides good periodic information on supplies, personnel, deliveries, Caesarean sections, and cases of complications

Present effort 0 1 2 3 4 5

2. Staff at management level regularly monitors and analyses results from the routine statistics (above)

Present effort 0 1 2 3 4 5

3. Recent surveys provide data on maternal events (pregnancies, deliveries, attendants and sites for deliveries, estimates of maternal deaths, etc.)

Present effort 0 1 2 3 4 5

4. Management systematically use statistical information for decisions and reconsideration of strategies for reducing maternal mortality

Present effort 0 1 2 3 4 5

5. Hospital follows a regular procedure to review and learn from every case of a maternal death in the facility

Present effort 0 1 2 3 4 5

APPENDIX G

LETTER OF APPROVAL: DEPARTMENT OF HEALTH: FREE STATE



health

Department of
Health
FREE STATE PROVINCE

25 February 2014

Ms N.S Macheoane
PO Box 1220
Kroonstad
9500

Dear Ms N.S Macheoane

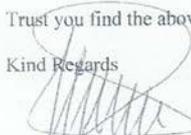
Subject: The evaluation of strategies used to reduce the maternal mortality rate in Fezile Dabi District (Free State Province)

The above mentioned correspondence bears reference.

- Permission is hereby granted for the above – mentioned research on the following conditions:
- Participation must be voluntary.
- Written consent by each participants.
- Ascertain that your data collection exercise neither interferes with the day to day running of the health facilities nor the performance of duties by the respondents.
- Serious Adverse events to be reported and/ or termination of the study.
- Confidentiality of information will be ensured and no names will be used.
- Research results and a complete report should be made available to the Free State Department of Health on completion of the study.
- Progress report must be presented not later than one year after approval of the project to the Ethics Committee of the University of Free State and to Free State Department of Health.
- Signed permission letters from the CEO of the Boitumelo Hospital in Kroonstad must be obtained
- Research may not be conducted before the above conditions has/have been meet.
- Department of Health to be fully indemnified from any harm that patients and staff experiences in the study.

Trust you find the above in order.

Kind Regards


Dr D Motau

HEAD: HEALTH

Date: 18/02/14

APPENDIX H

LETTER OF APPROVAL: MANAGEMENT APPROVAL: HOSPITALS A, B AND C



boitumelo hospital

Department of Health
Boitumelo Regional Hospital
FREE STATE PROVINCE

04 April 2014

MS N S MACHEOANE
P.O. BOX 1220
KROONSTAD
9599

Dear Ms. N S Macheoane

REQUEST TO CONDUCT RESEARCH

1. Your Letter dated 26 March 2014 of the above mentioned subject refers.
2. Kindly be informed that the Chief Executive Officer has approved your request to visit Boitumelo Regional Hospital and we thank you for choosing our hospital.
3. We are looking forward to seeing you.

Hope you find the above in order.

Mr. M.E Letshokgohla
CEO: Boitumelo Regional Hospital

Mr. M.E Letshokgohla
Chief Executive Officer
Boitumelo Hospital
Private Bag X 47 Kroonstad. 9500
Tel: (056) 216 5397 Fax: (056) 2131 600
E-mail Address: Galeboep@fshealth.gov.za

APPENDIX I

REQUEST AND APPROVAL TO USE THE MNPI QUESTIONNAIRE

From: Macheoane Physiotherapy [<mailto:ntsoaki@lantic.net>]
Sent: Monday, January 28, 2013 2:54 PM
To: Emily Sonneveldt
Subject: RE:

Dear madam

Hi there, I trust that you are well in the new year. I am very close to finish my research proposal. Following our last year's conversation, can you kindly please help modify the MNPI tool for my research. TTITLE: **THE EVALUATION OF STRATEGIES USED TO REDUCE MATERNAL MORTALITY IN THE FEZILE DABI DISTRICT (FREE STATE PROVINCE) South Africa. Site target population:** one regional hospital, one district hospital and one clinic will be recruited.

Looking forward to hear from you.

Mrs Ntsoaki Wageng

Thank you for your interest in the MNPI. Yes, you are welcome to use the tool for research purposes. I am attaching the questionnaire for your reference. Please let us know if we can be of any help in modifying the tool or provide support during analysis.

Good luck with your research.

Regards,

Emily Sonneveldt