FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS IN A TERTIARY HOSPITAL

CHELESILE MHLOPHE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS IN A TERTIARY HOSPITAL

CHELESILE MHLOPHE

A dissertation submitted in fulfillment of the requirements for the degree of

MASTER'S IN NURSING SCIENCE

Faculty of Health Sciences
School of Health Care Sciences
Department Nursing Sciences

January 2019

Supervisor: Dr VM Bhana-Pema
Co-supervisor: Prof MD Peu

DECLARATION

I, *Chelesile Mhlophe*,
Student Number: *982 197 59*,

declare that:

"*FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS IN A TERTIARY HOSPITAL*"

is my own work that I am submitting for the Master's Degree in Clinical Nursing at the University of Pretoria. I solemnly declare that I independently conducted the study with no personal interest in it but only for a cause of improving the quality of care for pregnant mothers.

15 February 2019

Signed **Date**

DEDICATION

I would like to dedicate this study to all moms who have lost their pregnancies to stillbirths. With the work that I have done, I want to encourage them and declare that I believe stillbirths can be reduced with robust awareness‘s and health education on danger signs of pregnancy.

ACKNOWLEDGEMENT

I would like to first express my deepest sincere gratitude and appreciation to my family who supported me even when I sacrificed time to these studies when I was supposed to be with them. My loving husband Jama Mhlophe who has been a pillar of strength and encouraged me even when I felt like throwing a towel in. My one and only dear son Zibulo and my lovely girls Zinhle Ziyanda and Mandi, who at times would say “mommy this is self-inflicted pain” while I was burning midnight candles but still showed love and made my cup of coffee for energy. Welly, my son, thank you for guiding and coaching me with computer skills when technology threw stones at my face.

My second appreciation goes to my former Deputy Director Nursing services Mrs PN. Rakometsi who at the birth of my dream of study encouraged, motivated and recommended and supported me throughout her tenure of leadership in Witbank Hospital. I thank the department of Mpumalanga health and Witbank hospital for allowing me to carry out my study in the institution.

Thirdly I would like to give a profound appreciation to my Supervisor Dr VM Bhana-Pema who infused a sense of worth and self-esteem in me when I felt my world was crumbling with overwhelming work. Her polite voice became inspirational, her understanding of positive words and respect became the foundation of new zeal and strength each day. Thank you to my co-supervisor Prof MD Peu whose name became familiar to my family as she spent her time and money phoning to ensure I do not miss deadlines.

Last but not least my biggest thanks goes to my statistician Dr S.A.S Olorunju from SAMRC who sacrificed time and effort with his expertise on shaping numbers and values to give meaning for my work. Thank you very much Dr Steve that even at your verge of retirement my project was your concern that I complete it. My Editor Ms Berdine Smit, this work would have not been neatly and soundly readable without your input of the use of language and corrections.

Above all, I thank the almighty God who blesses us with wisdom, knowledge, and His grace to allow us to continually live and unleash our potentials to fulfil our purpose on earth.

ABSTRACT

TITLE: FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS IN A TERTIARY HOSPITAL

INTRODUCTION

Stillbirths are a global public health concern. It is estimated that 2.6 million stillbirths occur around the globe annually, of which more than 20 000 babies are stillborn in South Africa. This illustrates the magnitude of the prevalence of stillbirths. Many stillbirths are not openly discussed in communities, though the grief thereof is immense and unbearable to the families.

AIM

- To assess the risk factors contributing to the occurrence of stillbirth delivery in a tertiary hospital in Emalahleni sub-district in Mpumalanga province.

OBJECTIVES

- To determine the antenatal factors contributing to the occurrence of stillbirth delivery at a tertiary hospital in Emalahleni sub-district Mpumalanga province.
- To determine the intrapartum factors contributing to the occurrence of stillbirth delivery at a tertiary hospital in Emalahleni sub-district in Mpumalanga province.

METHOD

This study used a quantitative retrospective descriptive approach in line with a positivist strategy. Records were assessed using a data collecting tool to assess factors contributing to the occurrence of stillbirths in a tertiary hospital at Emalahleni in Mpumalanga province. Data was coded and

aggregated to meaningful information using statistical tool Stata 14.1/15 with assistance of a statistician. Data analysis was done to assess factors associated to stillbirths.

RESULTS

The findings of this study may be of benefit to quality improvement in the longstanding challenge of stillbirth in the hospital where the study will be conducted. The study may also assist the government with attaining the 2030 sustainable development goal target of 10 stillbirths per 1000 births.

CONCLUSION AND RECOMMENDATION

The study highlighted contributing factors to the occurrence of stillbirths in a tertiary hospital. The findings revealed challenges regarding health education of pregnant mothers about risk factors in pregnancy.

Therefore, it was recommended that there must be health education to pregnant women to prevent stillbirth.

TABEL OF CONTENTS

TOPIC		PAGE NUMBER
Declaration		i
Dedication		ii
Acknowledgement		iii
Abstract		v
Table of Contents		vi
CHAPTER 1 **OVERVIEW OF THE STUDY**		
NUMBER	**TOPIC**	**PAGE NUMBER**
1.1	INTRODUCTION / BACKGROUND	1
1.2	PROBLEM STATEMENT	2
1.3	RESEARCH AIM, OBJECTIVES AND QUESTION(S) OR HYPOTHESIS	3
1.3.1	Aim	3
1.3.2	Objectives	3
1.3.3	Questions	3
1.4	IMPORTANCE AND BENEFITRS OF THE PROPOSED STUDY	3

NUMBER	TOPIC	PAGE NUMBER
1.4.1	Benefits to the community	3
1.4.2	Benefits to the healthcare system	4
1.4.3	Benefits to the government	4
1.5	DELIMITATIONS AND ASSUMPTIONS	4
1.5.1	Delimitations	4
1.5.2	Paradigm	4
1.5.3	Assumptions	4
1.5.3.1	Ontology	5
1.5.3.2	Epistemology	5
1.5.3.3	Methodology	5
1.6	DEFINITION OF KEY TERMS	6
1.6.1	Stillbirth	6
1.6.2	Antenatal care	6
1.6.3	Intrapartum care	6
1.6.4	Contributing factors	6
1.6.5	Tertiary hospital	6
1.7	ETHICAL AND LEGAL CONSIDERATIONS	7
1.7.1	Beneficence	7

NUMBER	TOPIC	PAGE NUMBER
1.7.2	Risk and Benefits	7
1.7.3	Principle of respect for persons	7
1.7.4	Anonymity	8
1.7.5	Confidentiality	8
1.7.6	Justice	8
1.7.7	Informed consent	8
1.8	ORGANISATION OF THE STUDY	9
1.9	CONCLUSION	9
CHAPTER 2 **LITERATURE REVIEW**		
NUMBER	**TOPIC**	**PAGE NUMBER**
2.1	INTRODUCTION	10
2.2	STILLBIRTHS	10
2.3	PRIMARY HEALTH CARE RE-ENGINEERING	12
2.4	ANTENATAL CARE	13
2.4.1	Frequency of antenatal care attendance	16
2.4.2	Booking	17
2.4.3	Health education	19

NUMBER	TOPIC	PAGE NUMBER
2.4.3.1	Health education on danger signs in pregnancy	20
2.4.3.2	Health education on diet and exercise	20
2.5	SCREENING	22
2.5.1	Screening for malnutrition	22
2.5.2	Screening for anaemia	22
2.5.3	Testing of haemoglobin to screen for anaemia	23
2.6	ADMINISTERING OF SUPPLEMENTS	24
2.7	PREVIOUS MEDICAL HISTORY	25
2.8	VITAL SIGNS AND BLOOD TEST	26
2.9	CHECKING OF BLOOD PRESSURE	26
2.10	BLOOD TEST	27
2.10.1	HIV Blood Test	27
2.11	ANTENATAL FOETAL KICK COUNT	28
2.12	INTRAPARTUM CARE FACTORS	28
2.12.1	Monitoring of labour using a partogram	29
2.12.2	Mode of delivery	29
2.12.3	Delivery complication	29
2.12.4	Health care category delivering	30

NUMBER	TOPIC	PAGE NUMBER
2.12.5	Outcome of the delivery	30
2.12.6	Sex and weight of the stillborn baby	31
2.13	COUNSELLING	31
2.14	FUTURE BIRTH PLAN	32
2.15	CONCLUSION	32
CHAPTER 3 **RESEARCH METHODOLOGY**		
NUMBER	**TOPIC**	**PAGE NUMBER**
3.1	INTRUDUCTION	33
3.2	STUDY DESIGN	33
3.2.1	Quantitative research	33
3.2.2	Non-experimental designs	34
3.2.3	Retrospective design	34
3.2.4	Descriptive design	35
3.3	STUDY SETTING	35
3.4	STUDY POPULATION / UNIT OF ANALYSIS AND SAMPLING	36
3.4.1	Population / Unit of analysis	36
3.4.2	Sample	36

NUMBER	TOPIC	PAGE NUMBER
3.4.3	Sampling method	36
3.4.4	Calculation of sample size	37
3.4.5	Eligibility criteria	37
3.5	DATA COLLECTION	37
3.5.1	How was data collected?	38
3.5.2	What data was collected?	38
3.5.3	Who collected the data?	38
3.5.4	Where was the data collected?	38
3.5.5	When was the data collected?	39
3.6	MEASURING TOOLS / DATA COLLECTING TOOL	39
3.6.1	Section A	39
3.6.2	Section B	39
3.6.3	Section C	40
3.7	DATA COLLECTING TECHNIQUES	40
3.8	VARIABLES	41
3.8.1	Independent variable	41
3.8.2	Dependent variable	41
3.9	QUALITY CONTROL	41

NUMBER	TOPIC	PAGE NUMBER
3.9.1	Instrument validity	42
3.9.2	Face and content validity	42
3.9.3	Instrument reliability	42
3.9.4	Pilot study	43
3.10	DATA ANALYSIS	43
3.11	CONCLUSION	43
CHAPTER 4 **DATA ANALYSIS AND DISCUSSION OF RESULTS**		
NUMBER	**TOPIC**	**PAGE NUMBER**
4.1	INTRODUCTION	44
4.2	DESCRIPTION OF THE UNIT ANALYSIS	44
4.3	DISCUSSION OF RESULTS	45
4.3.1	SECTION A: Socio-demographic factors	45
4.3.1.1	Age	45
4.3.1.2	Marital status	46
4.3.1.3	Educational background	48
4.3.1.4	Residential area / referring sub-district	48
4.3.1.5	Occupation / Employment History	50

NUMBER	TOPIC	PAGE NUMBER
4.3.1.6	Population Group	51
4.3.1.7	Identify	53
4.3.1.8	Lifestyle issues	54
4.3.2	SECTION B: Antenatal factors	54
4.3.2.1	Booking status	55
4.3.2.2	Trimester of first antenatal booking	56
4.3.2.3	Booking place	57
4.2.3.4	Health education	57
4.2.3.5	Previous medical History	60
4.2.3.6	Number of pregnancy (Gravid history)	61
4.2.3.7	Previous obstetric risk factors	62
4.2.3.8	Vital data monitoring	63
4.2.3.9	Blood test	64
4.2.3.10	Use of a fatal kick count chart	65
4.3.3	SECTION C: Intrapartum care	66
4.3.3.1	Status of the baby on admission	66
4.3.3.2	Monitoring done on progress of labour until delivery using a partogram	66

NUMBER	TOPIC	PAGE NUMBER
4.3.3.3	Mode of delivery	67
4.3.3.4	Health care category delivering	67
4.3.3.5	Outcome of Delivery	68
4.3.3.6	Sex of stillbirth	69
4.3.3.7	Weight categories of stillborn babies	70
4.4	COUNSELLING	70
4.5	FUTURE BIRTH PLAN DISCUSSION	71
4.6	GENERAL COMMENTS CLASSIFICATION OF COMMON CONDITIONS	72
4.7	CONCLUSION	74
CHAPTER 5 **CONCLUDING RESEARCH FINDINGS, RECOMMENDATIONS, LIMITATIONS AND FINAL CONCLUSIONS**		
NUMBER	**TOPIC**	**PAGE NUMBER**
5.1	INTRODUCTION	76
5.2	RESEARCH QUESTION	76
5.3	CONCLUDING RESEARCH FINDINGS ON FACTS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS	77
5.3.1	Socio-demographic factors contributing to stillbirths in a tertiary hospital	77

NUMBER	TOPIC	PAGE NUMBER
5.3.2	Antenatal factors contributing to the occurrence of stillbirths in a tertiary hospital	79
5.3.3	Intrapartum factors contributing to the occurrence of stillbirth in a tertiary hospital	81
5.4	RECOMMENDATIONS FOR PRACTICE	82
5.5	RECOMMENDATION FOR FURTHER RESEARCH	83
5.6	CONTRIBUTION TO BODY OF KNOWLEDGE	84
5.7	LIMITATIONS	85
5.8	FINAL CONCLUSION	85

REFERENCES	
TOPIC	**PAGE NUMBER**
Reference	87

ANNEXURES		
ANNEXURE	**TOPIC**	**PAGE NUMBER**
ANNEXURE A	DECLARATION OF ORIGINALITY	99
ANNEXURE B	DATA COLLECTION	102
ANNEXURE C	LETTER FROM THE STATISTICIAN	108
ANNEXURE D	PERMISSION FROM CEO TO USE RECORDS	110

ANNEXURE	TOPIC	PAGE NUMBER
ANNEXURE E	DECLARATION FOR STORAGE OF RESEARCH INFORMATION	112
ANNEXURE F	LETTER OF APPROVAL FROM FACULTY OF HEALTH SCIENCES ETHICS COMMITTEE	114
ANNEXURE G	DECLARATION OF HELSINKI	117
ANNEXURE H	LETTER TO REQUEST TO USE SOME OF THE INFORMATION ON A DATA COLLECTING TOOL	119

LIST OF FIGURES

FIGURES	TOPIC	PAGE NUMBER
FIGURE 4.1	Socio-demographic factors, antenatal factors and intrapartum factors	45
FIGURE 4.2	The marital status trend among women who delivered stillbirths in Emalahleni	47
FIGURE 4.3	Distribution of stillbirths per sub-district	49
FIGURE 4.4	Sub-district referral pathway for the tertiary hospital where research was done	49
FIGURE 4.5	The employment trend amongst women who delivered stillbirths	51
FIGURE 4.6	Population group trends to the delivery of stillbirths	52
FIGURE 4.7	Identify representing Nationality	53

FIGURES	TOPIC	PAGE NUMBER
FIGURE 4.8	Booking status according to the trimester	56
FIGURE 4.9	Health education implementation	58
FIGURE 4.10	Stillbirths per gravid category	61
FIGURE 4.11	HIV trend amongst the mothers who delivered the stillbirths	64
FIGURE 4.12	Showing delivery outcome with the classification of stillbirth	68
FIGURE 4.13	Sex of the stillborn babies	69
FIGURE 4.14	Bereavement counselling	71
FIGURE 4.15	Common comments indicated by staff in stillbirths records	73

ABBREVIATIONS	
ABBREVIATION	**MEANING**
NaPeMMCo	National Perinatal Mortality and Morbidity Committee
PPIP	Perinatal Problem Investigating Programme
WHO	World Health Organisation
STATS SA	Statistics South Africa
ANC	Antenatal care
PMTCT	Prevention of Mother to Child Transmission
BANC	Basic Antenatal care
ESMOE	Essential Steps in Management of Obstetric Emergencies
MNCWH and Nutrition	Maternal, Newborn, Child and Women's Health and Nutrition

CHAPTER 1
OVERVIEW OF THE STUDY

1.1 INTRODUCTION / BACKGROUND

Stillbirths remain traumatic health and public concern within the health care system. Despite the methods, strategies and efforts in place, stillbirths continue to occur worldwide. Hofman (2015:1) referred to stillbirths as; "A story of tragic neglect across the developing world". There were an estimated 2.6 million stillbirths globally every year according to (Horton and Samarasekera, 2016:1). This escalation in the statistics brings uncertainties to the global villages. Africa, Nigeria and South Africa are the sub-Saharan countries with the highest rates of stillbirths. According to Hofman (2015:2), South Africa has a global ranking of 148 out of 193 countries with regards to stillbirth statistics. (Bateman, 2011:266) mentioned in 2009 that South Africa fell behind countries such as Mexico and Columbia that have the same health care spending and infrastructure but managed to halve their stillbirth rate in the same period compared to South Africa.

According to Lehohla (2014:25), more than 20 000 stillbirths occur per year in South Africa, and the number of stillbirths increased to 63.8% of the total perinatal deaths from 2011 to 2013. Some of these stillbirths are preventable if proper management processes are put in place (de Bernis, Kinney, Stones, ten Hoope-Bender, Vivio, Leisher et al., 2016:63). Froen, Freiberg, Lawn, Bhutta, Pattinson, Allison et al. (2016:10) stated that in 2014, the World Health Organisation Executive Board endorsed an action plan framework to end preventable deaths of unborn babies through a guide called Every New Born Action Plan. It was in this plan that member states countries requested stillbirth prevention targets.

In South Africa, the targets were set through the Strategic Plan (2012-2016) for Maternal, New-born, Child and Women's Health (MNCWH) and Nutrition in South Africa (National Department of Health [NDoH] 2012:44). Within the plan, South Africa aims to reduce the stillbirth rate from 19 stillbirths per 1000 in 2013 to 10 stillbirths per 1000 births by 2016. The hospital in Mpumalanga province at Emalahleni sub-district is struggling to reduce the stillbirth rate, which remains on average above 30 stillbirths per 1000 births annually as shown in the Mpumalanga tertiary hospital perinatal mortality

and morbidity minutes (Mpumalanga Department of Health [MPDoH] 2016). Hence, the importance of assessing the factors contributing to the occurrence of stillbirths in the tertiary hospital in Mpumalanga. This will assist in achieving the national target as well as the Sustainable Developmental Goal target of 12 stillbirths per 1000 births by 2030 (Michalov, Chola, McCee, Tugendhaft, Pattinson, Kerber & Hoffman, 2015:7).

1.2. PROBLEM STATEMENT

Stillbirths are a global public health concern. To illustrate the magnitude of stillbirths, it has been referred to as "A story of tragic neglect across the developing world" (Hofman, 2015:1). Dippenaar and da Serra (2012:9) define a stillbirth as a viable foetus, of 28 weeks' gestation or older, which died in utero. Grief, sadness and depression are just some of the emotions experienced by families who go through the delivery of a stillborn baby (Kiguli, Namusoko, Kerber, Peterson & Waiswa, 2016:6).

In response to the high occurrence of stillbirths, the South African government implemented the Strategic plan (2012-2016) for (MNCWH) and Nutrition, in order to reduce the high statistics of stillbirths in South Africa. Under the guidance of the strategic plan for (MNCMH) and Nutrition in South Africa, many government priority interventions for maternal health and new-born care (NDoH, 2012:9) have been put in place through Primary Health Care reengineering. The priority interventions include amongst others the provision of basic antenatal care. In antenatal care, a woman is expected to book for her delivery before 20 weeks and visit a clinic at least five times before delivery to monitor progress and screen for health risks in pregnancy. The NDoH (2012:12) further mentions other priority interventions being the establishment of maternity waiting homes, the implementation of the Essential Steps in Managing Obstetric Emergencies (ESMOE), intrapartum care through improved use of a partogram, identification and response to emergencies. However, despite all these priority interventions, the incidence of stillbirths continues to be high in South Africa.

One of the priority interventions, the Perinatal Problem Identification Program (PPIP) audit system, was established in the late 1990 s under the Medical Research Council (Rhoda, Greenfield, Muller, Prinsloo, Pattinson, Kauchali et al., 2014:160). The primary purpose of PPIP is to monitor perinatal deaths to improve quality care to mothers and babies through an in-depth investigation of the causes and circumstances surrounding deaths in public facilities. Through this programme, a high stillbirth rate of an average of above 30 per 1000 births for the year 2015 has been found in a tertiary hospital in Emalahleni sub-district Mpumalanga Perinatal mortality and Morbidity minutes (MPDoH, 2016).

These statistics indicate that the prevalence of stillbirths in the tertiary hospital remains significantly above the current national target of 18 per 1000. The researcher, therefore, aims to determine the factors contributing to the occurrence of the delivery of stillbirths in this tertiary hospital.

1.3 RESEARCH AIM, OBJECTIVES AND QUESTION (S) OR HYPOTHESIS

1.3.1 Aim

To assess the risk factors contributing to the occurrence of stillbirth in a tertiary hospital in Emalahleni sub-district, Mpumalanga province.

1.3.2 Objectives

- Determine the antenatal factors contributing to the occurrence of stillbirths at a tertiary hospital in the Emalahleni sub-district, Mpumalanga province.
- Determine the intrapartum factors contributing to the occurrence of stillbirths at a tertiary hospital in Emalahleni sub-district, Mpumalanga province.

1.3.3 Questions

- What are the antenatal factors contributing to the occurrence of stillbirths at a tertiary hospital in the Emalahleni sub-district, Mpumalanga province?
- What are the intrapartum factors contributing to the occurrence of stillbirths at a tertiary hospital in the Emalahleni sub-district, Mpumalanga province?

1.4 IMPORTANCE AND BENEFITS OF THE PROPOSED STUDY

Brink, der Walt and Van Rensburg (2016:64) state that the research study should have the potential to contribute to health science knowledge and the health of the community and professionals. This study will benefit the community, health care system and assist the government in achieving global and national set targets on stillbirths.

1.4.1 Benefit to the community

This study is undertaken to investigate the factors contributing to the occurrence of stillbirths that will be translated into health education and health promotion, thus leading to the prevention of the immensely traumatic experience of mothers who deliver preventable stillbirths.

1.4.2 Benefits to the healthcare system

The findings of this study may benefit the quality improvement to the longstanding challenge of stillbirth in the hospital where the study was conducted. The findings of this study may be used to improve antenatal and intrapartum care in hospitals in other provinces.

1.4.3 Benefits to the government

The findings of the study may also contribute to the improvement plan to assist the government in the attainment of the 2030 sustainable development goal target 10 stillbirths per 1000 births.

1.5 DELIMITATIONS AND ASSUMPTIONS

1.5.1 Delimitations

In this study, the researcher's focus was only on the mothers who have delivered stillbirths at a tertiary hospital in the Emalahleni sub-district, Mpumalanga province. The woman must have been above twenty-eight weeks of pregnancy, as this is the period of gestation considered viable for a baby to be able to survive extra-uterine, with technological support available in South Africa.

1.5.2 Paradigm

According to (Brink, Van der Walt and Van Rensburg, 2006:25) a paradigm is a way of looking at a natural individual way of approach to an enquiry. Positivism forms the basis of this study. Positivism is a systematic way of doing research that emphasises the importance of observable facts Brink et al., (2015:25). These observable facts make up the foundation of truth that forms the understanding of the relationship of the phenomenon in the study and the environment. The phenomenon of interest was on stillbirths, where the researcher assessed records to determine factors contributing to the occurrence of stillbirths to women in a tertiary hospital of Emalahleni sub-district. The researcher believed that studying antenatal and intrapartum factors contributing to the occurrence of stillbirths, can lead to these factors being better controlled to prevent more stillbirths from occurring.

1.5.3 Assumptions

According to Botma, Greeff, Mulaudzi and Wright (2012:106), assumptions are beliefs held by the researcher that is implied or explicit and instinctive. They are truths, accepted without proof or empirical evidence.

1.5.3.1 Ontology

Ontology is defined as a branch of philosophy dealing with the nature of reality which deals with the scientist ideas about nature and characteristics of what they are studying (Botma et al., 2012:40). Based on a positivist point of view, the researcher believed that the truth and reality are that there are stillbirths delivered at Emalahleni sub-district in Mpumalanga. The researcher believed that there are antenatal and intrapartum factors that can be studied and measured in quantifiable statistics that can be used to control further delivery of stillbirths.

1.5.3.2 Epistemology

(Denzin and Lincoln, 2005:102) define epistemology as the process of thinking, the relationship of what we know and what we see as well as the truth we seek and believe as researchers. Using a positivist approach assisted the researcher to identify the factors contributing to the occurrence of stillbirths in the Emalahleni sub-district in Mpumalanga, using a quantitative, non-experimental approach with a descriptive, retrospective design. Within a positivist approach, the researcher was concerned with the objectivity in which personal views on the study will not be explored but factors contributing to the occurrence of stillbirths were extracted as written in the records. Generation of the truth can be done without bias (Polit and Beck, 2012:12) The researcher believed that retesting the findings generated from factors contributing to the occurrences of stillbirths still yield the same truth that makes knowledge sought from a positivist perspective reliable, accurate and generalizable to a larger population (Polit & Beck, 2012:13).

1.5 3.3 Methodology

Brink et al. (2015:24) mention the following: “Methodology is how the inquirer will obtain knowledge”. In this study, the researcher used a positivist approach as a scientific and an orderly way to gather knowledge. Therefore, the use of a quantitative, non-experimental, descriptive, retrospective design was to determine the risk factors that contribute to the occurrence of stillbirths in Emalahleni sub-district in Mpumalanga province.

1.6 DEFINITION OF KEY TERMS

1.6.1 Stillbirth

A stillbirth is a baby born with no signs of life at or after twenty weeks of gestation (World Health Organisation [WHO], 2016:18) or a baby born dead (NDoH, 2014:7). In this study, stillbirth was a baby born at or after 28 weeks' gestational age without any signs of life from women delivering at Emalahleni sub-district in Mpumalanga province.

1.6.2 Antenatal care

Antenatal refers to a period from the time from when a woman becomes pregnant until she goes into labour to deliver a baby (Pattinson, 2005:2). In this study, antenatal care refers to the whole period of pregnancy until a mother delivers a stillborn baby at Emalahleni sub-district in Mpumalanga. (Clarke, 2014:312) defines antenatal care as the care that a pregnant woman should receive after missing one menstruation cycle for the 20 weeks gestation period. In this study, it referred to the time the pregnant mother had contact with health care workers monitoring the progress of her pregnancy, until the time she delivered a stillborn baby.

1.6.3 Intrapartum care

Intrapartum care is care rendered to a woman during labour and delivery supported by a clinically and psychologically safe environment recognising a positive child birth experience (WHO 2018:1)

1.6.4 Contributing Factors

According to the Oxford South African School Dictionary (2010:218), "a factor is something that has an effect on a situation". In the study, contributing factors were pregnancy factors outlined in the Basic Antenatal Care Guide (Pattinson, 2005:49-50) and in the Guideline for Maternity Care in South Africa (NDoH, 2015b:37).

1.6.5 Tertiary hospital

According to the National Health Act No 61 of 2003 (NDoH, 2012:6), a tertiary hospital is a hospital that has 400 to 800 beds and it provides specialist level services provided by specialist and specialist intensivist. In this study, it referred to a hospital in Mpumalanga province that has 400 beds with a

maternity unit that has an average of 400 deliveries managed by a specialist obstetrician and were supervised by an advanced midwife.

1.7 ETHICAL AND LEGAL CONSIDERATIONS

Towsley-Cook and Young, (2013:2) define ethics as the system or code of conduct and morals advocated by a particular individual. In this study, the researcher observed the following ethical considerations the principle of beneficence, the principle of respect for human dignity and the principle of justice.

1.7.1 Beneficence

In this study, there was no infliction of physical, psychological or social harm or discomfort caused to the participants, since only records were used for this study.

1.7.2 Risk and Benefits

With the use of patient records, there was no risk to patients in this study. Polit and Beck (2012:351) define benefit as something of positive value related to health or welfare. In this study, information obtained on factors influencing the occurrence of stillbirth assisted the hospital in compiling a quality improvement plan, since was struggling with complying with the stillbirth rate of less than 20 per 1000 births. This will be of huge societal benefit on the decreasing psychological implications already alluded to by Heazel, Siasakos, Blencove, Burden, Bhutta, Cacciatore et al. (2016:38). There was an anticipated national and global benefit to the reduction of stillbirth to a target of 10 per 1000 births by 2030, as per the sustainable development goals.

1.7.3 Principle of respect for persons

The principle of respect is defined by Polit and Beck (2012; 154) as the right to self-determination and right to full disclosure, which entails the right to participate in a study, give information or refuse to, without the coercion of participants. Request for permission to use records was forwarded to Mpumalanga Provincial and Hospital management of a hospital at Emalahleni sub-district. There was no sensitive information contained in the questionnaire that can prejudice the respect of the mothers that have delivered stillbirths, to ensure respect for human dignity. Submission of the study proposal to the University Of Pretoria Faculty Of Health Science Ethics Committee will evaluate the whole proposal to ensure no infringement on respect for the human right to dignity.

1.7.4 Anonymity

For this study, the names of patients were not used on the questionnaires. Numbers were assigned to identify each file used during data collection to comply with anonymity and to prevent any information being linked to the file owners.

1.7.5 Confidentiality

Botma et al. (2015:17) state that confidentiality pertains to how you manage information to ensure that only researchers directly involved have access to it. The information obtained from the files was accessible only to the researcher and the statistician who was involved in aggregating information within a data collecting tool. During the research, all files were locked to prevent unauthorised access to information.

1.7.6 Justice

The principle of justice refers to the right to fair treatment and privacy according to Polit and Beck (2012:155). In this study, fair selection was used for the study sample, where consecutive sampling (Polit & Beck, 2012:278) was used to prevent discrimination and provide equal opportunity to all 400 files of patients who met inclusion criteria and had delivered stillbirths in the tertiary hospital selected for the study. All data obtained from files was treated as confidential and limited to only the researcher and the statistician until research was completed. There was no use of the names of mothers within the data collecting tool, only the numbers assigned to files were recorded enhance privacy.

1.7.7 Informed consent

Because of use of records, consent was obtained and received as an approval from the Mpumalanga province and Emalahleni sub-district management for accessing and use of hospital records. The University of Pretoria Faculty of Health Science Ethics Committee evaluated the proposal and ensured that the research was conducted as fair as possible and thereafter granted letter of approval and permission to conduct the study. Following approval from the University of Pretoria Faculty of Health Science an approval and permission for the study was obtained from the Department of Health in Mpumalanga province and the Chief Executive Authority of the hospital to conduct the study at the tertiary hospital.

1.7.7.1. Approval to access records

Access of records was done following approval from the Chief executive authority of the tertiary hospital. A request list of files was submitted to the administration manager to access all the files needed for the study.

1.8 ORGANISATION OF THE STUDY

The content of this study was organised in 5 chapters, these chapters were organised in sequence of activities undertaken in compiling the study on factors contributing to the occurrence of stillbirths in a tertiary hospital in Mpumalanga, in chapter 1, the study was introduced as well as the problem statement, with aims and objectives of the study. In chapter 2, content of literature review was presented indicating similarities and differences experienced in different countries on the subject of stillbirths. Consecutively chapter 3 followed with the discussion on the methodology of study. Chapter 4 addressed the discussion of findings. In chapter 5 a summary discussion of concluding research findings as well as recommendations, limitations and final conclusion of the study was presented.

1.9 CONCLUSION

In chapter 1 an overview of the study was presented including the background of the topic on stillbirths as well as the problem statement. Main aim, objective and question of the study was discussed including the importance and benefits of the study. Presented in this chapter was delimitations, assumptions and paradigm underpinning the belief of investigator in the approach of the study. Definition of key terms was covered as well as emphasis of the ethical and legal considerations observed during the study. A summary description of how the study was organised was discussed in this chapter. Following is Chapter 2 which dealt with an in-depth literature reviewed for this study.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

A literature review is a critical summary of research on a topic of interest often prepared to put a research problem in context (Polit & Beck, 2012:732). The purpose of a literature review is to convey what the reader knows regarding the topic of interest (Brink et al., 2015:70). For this study, the researcher used the University of Pretoria library space to access the World Cat search engine and Google Scholar. The Department of Health website (www.gov.za) was searched for guidelines related to maternal and child health care and health care strategies currently in place. More than 50 sources of information were consulted including articles, books related to maternal and child health, guidelines and research books.

All information reviewed on stillbirth was aimed at getting insight into work that has been done in regard to the challenge of stillbirths, which Hofman (2015:1) referred to as; “A story of tragic neglect across the developing world”. There were an estimated 2.6 million stillbirths globally every year, according to Horton and Samarasekera (2016:1). The researcher found that stillbirths have been under-researched, according to Goldenberg, Saleem, Pasha, Harrison and Mcclure, (2016:9). In their study titled Vision for 2020, they mentioned that there are many areas that would benefit from additional research to reduce stillbirths in lower and middle-income countries of which South Africa is one.

2.2 STILLBIRTHS

Stillbirths remain traumatic health and public health concern within the health care system. Despite the methods, strategies and efforts in place, stillbirths continue to occur worldwide. Hofman (2015:1) referred to stillbirths as, “A story of tragic neglect across the developing world”. In many countries, stillbirths are dealt with in a silent manner because of cultural connotations; however, this silence leaves many women shattered with many psychological effects. The effects, as reported by Heazel (2016:40), range from high rates of depressive symptoms, anxiety, post-traumatic stress, suicidal ideation, panic and phobias. The occurrence of stillbirths robs society of their ability to enjoy

reproductive life. Africa, Nigeria and South Africa are the sub-Saharan countries with the highest rates of stillbirths. According to Hofman (2015:2), South Africa has a global ranking of 148 out of 193 countries with regards to the highest statistics of stillbirths. Ndlovu (2011:266) mentioned in 2009 that South Africa is ranked lower than countries such as Mexico and Columbia that have the same health care spending and infrastructure but managed to halve their stillbirth rate in the same period compared to South Africa. With the well-structured health system of South Africa, stillbirths are expected to decrease compared to other developing countries with lower economic status and resources. Although there are provinces that are doing well in terms of reducing the occurrence of stillbirths, Mpumalanga remains with challenges in meeting the national and global set targets.

According to Statistics South Africa (2015:26), South Africa has more than 20 000 stillbirths per year, and the number of stillbirths has increased and constituted to 63.8 per cent of the total perinatal deaths from 2011 to 2013. Some of these stillbirths are preventable (De Bernis et al., 2016:63) if proper management processes are put in place. (Frøen, Friberg, Lawn, Bhutta, Pattinson, Allanson et al., 2016:10) stated that in 2014, the World Health Organisation Executive Board endorsed an action plan framework to end preventable deaths through a guide called Every New Born Action Plan. It was in this plan that member state countries requested stillbirth prevention targets. In South Africa, the targets were set through the Strategic Plan for Maternal New-born, Child and Women, Health and Nutrition plan (2012:44). In the plan, South Africa aims to reduce the stillbirth rate from 19 stillbirths per 1000 in 2013 to 10 stillbirths per 1000 births by 2016. There are provinces in South Africa, for example, the Western Cape, which are doing very well with regard to reducing stillbirths, however, Mpumalanga is one of the provinces that is still fighting to reduce the stillbirth rate.

To date, the stillbirth rate in Nkangala district remains high with a reported stillbirth rate of 25.9 per 1000 for 2015/16 compared to the Overberg district of Western Cape with a stillbirth rate of 12 per 1000 births for the same period of 2015/16 financial year (NAPEMCO, 2014-16:18).

The tertiary hospital in Mpumalanga province at Emalahleni sub-district is struggling to reduce the stillbirth rate which remains on average above 30 stillbirths per 1000 births annually as shown in the Hospital Perinatal Mortality and Morbidity Statistics (January, 2016). Within the same year, there is a notable decline in the stillbirth rate of the Mpumalanga province from 21.9 per 1000 to 21.3 per thousand (NAPEMCO, 2016:15). However, notable for the Nkangala district and the tertiary hospital, the stillbirth rate remains above 25 per 1000 (NAPEMCO, 2016:18).

With this picture of the Mpumalanga province, Nkangala district and tertiary hospital stillbirth rate compared to the Western Cape within the same country, it is clear that with a concerted effort in finding out the factors leading to occurrence of these stillbirths, there is a possibility of compiling improvement plans that can assist the hospital to reduce the stillbirth rate to at least below 20 per 1000 births. This will assist with attaining the national target as well as the Sustainable Developmental Goal target of 12 stillbirths per 1000 births by 2030 (Michalow, Chola, McGee, Tugendhaft, Pattinson, Kerber et al., 2015:7). In this study, the researcher sought to determine both socio-demographic, antenatal and intrapartum factors that contribute to the occurrence of stillbirths.

De Bernis et al. (2016:65) mentioned that a stillbirth rate is a key indicator of the quality of care during pregnancy and delivery. Therefore, the antenatal care of a pregnant woman is a strong determinant of the pregnancy outcome. The Primary Health Care re-engineering was focussed on strengthening services to reduce stillbirths and maternal deaths at all levels of care, and the researcher believed this approach could assist in the reduction of stillbirths in this specific Mpumalanga tertiary hospital.

2.3 PRIMARY HEALTH CARE RE-ENGINEERING

Primary health care re-engineering was one of the key interventions emanating from enactment of the Negotiated Service Delivery Agreement (NSDA) in South Africa. The NSDA was signed by cabinet ministers with the President in 2010 as a political commitment to achieve “A long and healthy life for all South African citizens” (Dennill and Rendall-Mkosi, 2012:66). In this agreement, a reduction in maternal and child mortality was one of the key strategic outcomes (MNCWHN, 2012:6). To achieve this key strategic outcome, it was realised that there are a number of priority interventions that needed to be put in place and be strengthened. A road map to process improving efficiency and effectiveness of primary health care services to achieve a reduction in maternal and child mortality followed with the design of a Strategic Plan for Maternal, Newborn, Child and Women’s Health and Nutrition in South Africa. This was for implementing from 2012 to 2016 with specific targets set to be achieved in MNCWHN, (2012).

It is in this strategic plan for MNCWHN 2012-2016, maternal health interventions are outlined, guiding antenatal care to optimise quality pregnancy outcomes for both babies and mothers through a basic antenatal care strategy. The basic antenatal care approach with a focus on four clinic visits during pregnancy was envisaged to reduce the stillbirth rate of 19 per 1000 in 2012 to 10 per 1000 in 2016 (MNCWHN, 2012:44).

2.4 ANTENATAL CARE

Antenatal care is defined as the time from when a woman becomes pregnant until she goes into labour to deliver a baby (Pattinson, 2012:2). This is the period that is regarded as a strong determinant of the delivery outcome (De Bennis et al., 2016:65). It is during antenatal care that the woman is prepared physically and emotionally to the expectation of a good delivery outcome. With frequent visits to a health facility, the woman is checked and educated about her pregnancy.

Pregnancy education includes physical preparation that includes doing exercises, eating healthily and screening and treatment of minor ailments. Pattinson (2012:5) states that antenatal care is aimed at screening and detecting those problems already present or those that can develop in the pregnant woman and her unborn child. During antenatal care, women are also given psychological and emotional care that includes the practice of respectful maternity care where a woman is cared for in a holistic manner that takes into consideration her social and psychological standing. This requires a relationship of trust, where a pregnant woman is able to confide in a health care practitioner about all her concerns about pregnancy. A support system needs to be established where the woman can disclose her next of kin for use in cases of emergency. During antenatal care, the maternal health of the woman as well as the health of the baby and its survival can be improved through continuous health education (Al-Ateeq and Al-Rusaiess, 2015:240). During antenatal care, it is not only the physical well-being of the mother and foetus that is looked, at but also the psychological and social aspects that are necessary in order to offer holistic care.

According to the WHO (2016:1), there are four components of antenatal care that all health personnel should focus on when dealing with a pregnant woman. These include risk identification, prevention and management of pregnancy-related or concurrent diseases with health education and health promotion. Successful implementation of antenatal care through these components has proven that it can lead to a reduction of up to two-thirds of the global maternal and neonatal deaths. (Pattinson, 2005:7) states that every opportunity to see and treat a pregnant woman should be seized and every site where pregnant woman contacts the health service should be utilised. All the above seeks to ensure that through antenatal preparation, the best possible pregnancy outcome for the mother and the baby is achieved (National Department of Health, 2016:29). This is evident from an antenatal survey done on the needs of pregnant women when attending antenatal care.

A qualitative systematic review survey was conducted by the WHO (2016:5) on what women want and expect from antenatal care. The study revealed that a women's, wants, needs and value in pregnancy is a "positive pregnancy experience". A positive pregnancy experience was regarded as the provision of effective clinical practices, relevant and timely information, psychological and emotional support by practitioners with good clinical and interpersonal skills. A positive pregnancy experience was further referred to as maintaining physical and socio-cultural normality, maintaining a healthy pregnancy for mother and baby including preventing and treating risk and illness. This would lead to an effective transition to positive labour and birth, thus achieving positive motherhood including maternal self-esteem, competence and autonomy (WHO, 2016:5). The researcher, therefore, believes that if antenatal care can meet most of the women's' needs as defined in the above survey outcome, this can lead to reducing stillbirths at a tertiary hospital in Nkangala district.

All interactions of the health care provider and the mother during antenatal attendance is recorded in a standardised document called maternal case record. A maternal case record is a document used to communicate the status and progress of pregnancy for both the woman and her foetus. It is a standardised national document, which forms a universal record for mothers across all provinces in South Africa (NDoH, 2016:29). On the first contact of the woman with a health worker to present her pregnancy, the woman is given the maternal case record document. She is taught to keep the book and carry it wherever she is travelling until she delivers. She is expected to bring it to the health facility during all visits. The basic demographic information about the woman is collected and recorded in her maternal case record.

Information written in the maternal case record includes factors like age, marital status, and place of residence, occupation and religious background. The age of a woman is an important factor because advanced maternal age is a risk to medical conditions that can complicate to stillbirths. (Mills and Lavender, 2014:85) state that advanced maternal age has become a clinical and public health concern because advanced maternal age has consistently been associated with adverse pregnancy outcomes. Their study further states that current evidence suggested an increased risk of miscarriage, ectopic pregnancies and stillbirths with advanced maternal age. Conditions like hypertension, diabetes and anaemia can be associated with advanced maternal age, which present risks in pregnancy. These conditions are listed for screening in the maternal case record (NDoH: 6) for every woman presented to the health facility.

Pregnant women face many socioeconomic disparities, ranging from difficulties to access hospital services due to unemployment or inability to afford transport cost to reach health facilities. Included in the maternal case record is the employment factor which can play a role in a woman's attendance to antenatal care. This was one of the factors explored in the study to determine the effect on women who delivered stillbirths at a tertiary hospital in Mpumalanga. Their educational level in understanding health implications becomes an important factor in how actions are taken with regard to their pregnancy risk factors that can lead to delivery of stillbirths. In a study conducted in Spain by (Luque-Fernandez, Lone, Gutierrez-Garitano and Bueno-Cavanillas, 2011:524), it was found that there is a significant connection between socio-economic status and stillbirths. It was revealed that 53 per cent of stillbirths was from women of African origin who had a lower or secondary level of education as compared to those of Spanish origin. Therefore, the researcher also intended to determine if these socio-economic factors contribute to the occurrence of stillbirths in a tertiary hospital in Mpumalanga.

Societal lifestyle health challenges are a threat to an unborn baby, therefore pregnant women need to be informed and educated on the implications of potential lifestyle hazards. Lifestyle hazards can harm their baby in utero. These hazards include smoking, alcohol and the use of drugs. A study done by (Poels, Lamain-de Ruiter, van Stel, Kwee, Bekker, Franx et al., 2017:35) confirmed that there are unhealthy modifiable lifestyle factors that lead to pregnancy adverse outcomes. In the same study by Pole (2017:39), it was found that carbon monoxide and nicotine from tobacco smoking caused reduced placental blood flow in combination with decreasing oxygen supply to the foetus. The decreased foetal oxygen led to increased risk of adverse pregnancy outcomes of preterm deliveries as well as a high risk of stillbirth. (Jahani, Akbarian Rad, Naghavian, Salmanian and Haghshenas Mojaveri, 2015:23) also confirmed that stillbirth risk increases from the first pregnancy when smoking, therefore making it vital that pregnant women avoid smoking in pregnancy so as to reduce chances of adverse pregnancy outcomes. The WHO (2016:49) states that health care providers should provide pregnant women, their partners and household members with advice and information about the risk of second-hand smoke to the unborn baby.

Alcohol, drugs and other substance use have also been found to be an equal threat to the unborn babies. (Group, 2011:16) found that elicited drug use was associated with increased stillbirths. Therefore, efforts have to be made to ensure that women who present with lifestyle health risk challenges are referred for psychosocial intervention assistance (WHO, 2016:48).

Good antenatal care should be every health provider's responsibility and ensuring that advice and support are provided to the woman and her family (Amenu, Endale, Seyoum and Bayu, 2016:52) becomes a crucial objective. Antenatal care becomes a crucial opportunity to promote healthy behaviour that will lead to positive pregnancy outcomes and prevent stillbirths (Al-Ateeq et al., 2015:52)

2.4.1. Frequency of antenatal care attendance

There are guidelines on basic antenatal care that form a roadmap on the management of pregnant women and how often she should attend antenatal care. These guidelines were developed by the World Health Organisation. These have been tailor-made to suit different levels of countries, especially lower-middle income countries as a continuous strategy to reduce both maternal neonatal and stillbirths globally. The Focused antenatal care guidelines were introduced in South Africa in 2008 (Patience, Sibiya and Gwele, 2016:2).

According to Pattinson (2005:7), a woman is supposed to have five attendances including the first booking visit to the clinic for her antenatal care. This package meant that a woman would attend the clinic during the first booking visit, and again at 20, 28, 34 and 38 weeks. Pattinson (2016:5) says that a national survey done showed more stillbirths were associated with a decreased number of antenatal visits. Therefore, a revised basic antenatal care approach called Basic Antenatal Care PLUS (BANC PLUS) was established to improve the quality of antenatal care. In the BANC PLUS approach, pregnant mothers are expected to attend the antenatal care eight times (Pattinson, 2016:9). While attendance to a clinic of pregnant mothers improved to above 95 per cent in South Africa over the years, Pattinson (2016:1) however says that the timing of booking to allow for all investigations in order to prepare before delivery remains a challenge. Most women are found to be booked only after 20 weeks of gestation.

In a study done in Finland by (Raatikainen, Huurinainen and Heinonen, 2007:3) it was found that non-attenders and under-attenders of antenatal care were statistically significantly more often unmarried, smokers, of a young age, grand multiparty and alcohol users. The same study revealed that there is a statistically higher rate of stillbirths in those with inadequate attendance to antenatal care than those who routinely attended antenatal care. Therefore, pregnant mothers of above-identified risk of low attendance should be motivated and supported to attend antenatal care to prevent the risk of stillbirths. It is important to note that in this study, it was the importance and nature

of the antenatal care provider as an aetiology of the factor of under-attendance of antenatal care, which means for stillbirths to be reduced, health care providers need to improve their relationship and care to pregnant mothers so as to motivate them to attend antenatal care. (Organization, 2016:104,2012) says that a woman's contact with her antenatal care provider should be more than a simple "visit", but a provision of care and support as this would facilitate the uptake of preventative measures, timely detection of risks and reduce complications that include stillbirths.

A study was conducted on the timing of antenatal care visits in relation to the occurrence of stillbirths in Mpumalanga and Western Cape provinces. In the study conducted by (Lavin and Pattinson, 2018a:145), it was found that most of the stillbirths happen around 34, 35, 36 and 37 weeks where there is no routine antenatal attendance in Mpumalanga province. The Mpumalanga province study was compared to the Western Cape province (Gebhardt, 2016) where it was found that their stillbirth rate had drastically decreased following implementation of the eight antenatal visits instead of the four of the FANC model (WHO, 2002). The findings of Gebhardt (2016) concurred with the recommendations of the WHO 2016 New Guideline on Antenatal care model (WHO, 2016:1), which recommended the abolishing of the Four Antenatal Care attendance (FANC) 2002 guidelines and amending this to eight antenatal care attendances so as to reduce stillbirths (WHO, 2016:104).

With the new recommendations of the WHO ANC model (2016:104), this study may form a baseline to measure the effectiveness of increased attendance in comparison to stillbirth occurrence in the tertiary hospital in Mpumalanga for future researches, as the new guideline of BANC PLUS (8 VISITS) has been affected outside the sample of study (Kaswa, Rupesinghe and Longo-Mbenza, 2018a,Hofmeyr and Mentrop, 2015b,Tshibumbu and Blitz, 2016b).

2.4.2 Booking

Booking time is referred to as the first contact of a pregnant woman with a health service provider. In the Guideline for Maternity Care in South Africa (NDoH, 2016: 30), it states that after one visit to a health facility or practitioner, the pregnant woman is regarded as booked. Singh and Biswas (2016:1287) reported that the booking visit is important as it becomes a confirmation of pregnancy as well as taking a detailed history of the pregnant woman and assessing for risk factors. Many countries have set their own booking time that is regarded as early enough to screen and manage the pregnant woman with complications. According to (Abuka, Alemu and Birhanu, 2016:47) in a study done in Nigeria, a booked mother is regarded as being booked if the first contact was done

within 14 weeks of pregnancy. After 14 weeks, it is regarded as a late booking. In South Africa, early booking is regarded as the first contact with a health care provider soon after recognising that one is pregnant within a period of 12 weeks (Gumede, Black, Naidoo and Chersich, 2017:37). There have been reasons raised by pregnant women from both studies in Nigeria (Abuka, Alemu & Birhanu, 2014:47) and South Africa (Haddad et al., 2016:1) owing to late booking. In South Africa, women stated that they book late in fear of dealing with the stress of discovering their HIV status, and cultural beliefs related to witchcraft, meanwhile in Nigeria,(Ndidi and Oseremen, 2010:51) revealed that women do not see a reason to book early as they view antenatal care as curative not preventative measure to their pregnancy. The women believed that attending antenatal care was primarily to treat diseases (Oseremen & Ndidi, 2010:50), therefore implying that when one is well it is not necessary to attend antenatal care. This showed that there is still a need to educate women about the importance of attending antenatal care.

In a study conducted by (Beauclair, Petro and Myer, 2014:4), it was found that gestational age, booking time of the mother and other demographic maternal factors had an increased association with stillbirths. In the same study, it was further found that 7.3%of pregnant women booked in the first trimester, 60.1% booked in the second trimester while 32.6% booked in the third trimester (Beauclair et al., 2014:4). The findings of the study conducted by Beauclair et al. (2014:4) correlate with the findings of a study conducted by (Mokhondo, 2010:36) who found that only 3 per cent of women booked in their first trimester, 44 per cent in their second trimester and 53 per cent in their third trimester. The two authors concurred and indicated that the timing of the first antenatal visit remains a challenge because it occurs late in the second or third trimester.

This challenge of booking late leaves health care providers with very limited time to educate, screen and manage all pregnancy-related risks that could, in turn, lead to stillbirths. Abuka, Alemu and Birhanu (2016:1) indicate that booking early is more beneficial in preventing pregnancy complications, enables early detection of complications and lead to early referral for higher pregnancy management. Oseremen and Ndidi (2010:50) revealed that the challenges of late booking are multifactorial. Therefore, more studies are needed to demystify some of the cultural beliefs to remove barriers to early prenatal care and reduce complications leading to stillbirths. Therefore, part of this study will look into the timing of booking of the women who delivered at Emalahleni Tertiary hospital. This will be assessed based on the Basic Antenatal Guideline (Pattinson, 2005:15). The timing of booking based on trimester will assist with determining if there was adequate time to identify

any pregnancy risks and treat them to prevent stillbirth, the rate of which remains above 30 per 1000 births in this tertiary hospital in Mpumalanga.

2.4.3 Health education

Health education is one of the biggest instrument that should be utilised to enable women to make informed decisions about their health matters to reduce stillbirths and other related negative pregnancy outcomes.

According to Al-Ateeq and Al-Rusaiess (2015:240), health education is an important component of prenatal care, particularly for those who are pregnant for the first time. According to (Bintabara, Mpembeni and Mohamed, 2017:2) women's knowledge of the danger signs of obstetric complications is profoundly important to enhance the utilisation of skilled care during pregnancy. In addition, Morhason-Bello, Fagbamigbe, Mumuni, Adesina, Salam and Ifemeje et al. (2016:28) support that educating women about the danger signs in pregnancy can act as a catalyst for women to seek care early and possibly avert serious adverse pregnancy complications. In the Maternity Care Guidelines of the NDoH (2016:14), it is stated; "Health workers administering care to the pregnant women must demonstrate respect and a genuine interest in their clients". This can be demonstrated by creating a relationship of trust with pregnant women, leading to a relationship that will foster empowerment of the pregnant women through information sharing. Information must be provided to all pregnant women, verbally, and where possible in the form of written, or illustrated cards or pamphlets as advised by the Maternity Care Guidelines of the NDoH (2016:32).

(Biya, Chokwe and Wright, 2014:1) state that it is common knowledge that verbal communication often fails, as the women either forget or did not understand. Women may fail to understand health education given to them due to health jargon in the language used, therefore it helps to supplement verbal education with health promotion leaflets. A survey from (Bintabara et al., 2017) revealed that 60 per cent of women indicated low satisfaction on the information given during prenatal care. Therefore, health education should be every health care worker's tool to fight against a lack of knowledge, especially concerning the danger signs of pregnancy so that stillbirths can be prevented.

The WHO Guidelines (2016:19) state that there is qualitative evidence that women in a variety of settings tend to view antenatal care as a source of knowledge and information. The pregnant women

appreciate any advice that may lead to a positive pregnancy experience. Therefore, the researcher intends to determine from the records of the women who delivered stillbirths, if they were provided with health education.

2.4.3.1 Health education on danger signs in pregnancy

Pregnancy is a normal life process that brings joy and excitement to the couple and significant family members. However, if the mother is not educated on inherent risks that might arise, it can end up in an agonising end for both mother and baby. Amenu et al. (2016:2) mentioned that women's knowledge about the danger signs of obstetric complications is profoundly important to enhance the utilisation of skilled care and enable women to seek emergency obstetric services when needed. The information given to mothers should include the five danger signs of pregnancy, which is a headache, abdominal pain, and sudden premature rupture of membranes with drainage of liquid from the vagina, vaginal bleeding irrespective of the amount and reduced foetal movement (NDoH, 2016:32). In a study conducted in the North-west of Ethiopia, it was found that only 55 per cent of pregnant women were aware of the danger signs (Bayou et al., 2016:2). The same study was done in Nigeria by Morhason-Bello et al. (2016:32) who found that 76 per cent of the women knew about key danger signs in pregnancy. From the above-mentioned studies, it is clear that not all women know how to recognise the danger signs of pregnancy, therefore health education needs to be strengthened with the aim of preventing stillbirths. The woman has to be informed to report to the health facility as soon as she experiences the mentioned dangers, as these can be detrimental to the life of her unborn baby, resulting in stillbirths.

2.4.3.2 Health education on diet and exercise

(Tveit, Saastad, Stray-Pedersen, Børdahl, Flenady, Fretts et al., 2009:1) describe diet as a strong determinant of the quality of the unborn baby, because what a pregnant woman eats or drinks during pregnancy is her unborn baby's nutrition. It is important for a woman to understand what she should eat and not eat. Globally, 12 per cent of women are underweight, with the highest prevalence of this being in Asia and Africa (Imdad, Lassi, Salaam and Bhutta, 2017:3). In the same study, it is stated that the maternal malnutrition, being both under-nutrition and over-nutrition, may lead to adverse pregnancy outcomes. The WHO (2016:14) also confirms that maternal under-nutrition is prevalent and is recognised as a key determinant of poor perinatal outcomes such as stillbirths. (Morrison and Regnault, 2016:2) mentioned that meeting dietary demands is more profound to those pregnant mothers already having maternal infections like immunodeficiency virus. These conditions on its own

can limit dietary intake and nutrient absorption, leading to the progression of disease that can lead to foetal compromise of intrauterine growth, retardation and stillbirths.

According to the American College of Obstetrician and Gynaecologists, a pregnant woman needs more calcium, folic acid, iron and protein than a woman who is not pregnant (Nierenberg, 2014:1). The woman needs to be educated about the food sources to obtain these nutrients (Nierenberg, 2014:1). He states that whatever a woman eats or drink during pregnancy, is her baby's source of nourishment, therefore pregnancy requires an adequate intake of energy, protein, vitamins and minerals to meet maternal and foetal needs. According to (Al-Ateeq et al., 2015:240), the health of pregnant mothers was affected by false beliefs and misconceptions about what food to eat and not to eat during pregnancy. It was believed that some food will lead to delivering babies with scabies or skin diseases. Such beliefs could result in important nutrient deprivation if education is not given on nutrition. Pregnancy diet misconceptions are addressed during antenatal care, especially with regard to food cravings, which is a body mechanism to indicate the required nutrient as opposed to a like or dislike as perceived (Nierenberg, 2014:1). Some women consume more calories than recommended, believing that they are eating for two (Al-Ateeq et al., 2015:241). In as much as diet is important, women should also be taught to guard against becoming overweight, because this can predispose them to diabetes and complications leading to stillbirths.

According to the WHO (2016:73), women's bodies undergo substantial changes during pregnancy, which are brought about by both hormonal and mechanical effects. According to the WHO guidelines (2016:16), there is evidence that women receiving diet and exercises interventions as part of their antenatal care are less likely to experience excessive gestational weight gain. Therefore, it is critical that women are given information about exercise and diet to minimise some of the discomforts related to pregnancy. The researcher will assess records to determine if women who delivered stillbirths in a tertiary hospital were educated on the importance of diet to guard against the risk of poor perinatal outcomes. It must be every health provider's responsibility to counsel a pregnant woman about healthy eating habits and keeping physically active to stay healthy and to prevent unwanted excessive weight gain (WHO, 2016:15).

2.5 SCREENING

2.5.1 Screening for malnutrition

The mid-upper arm circumference (MUAC) is used to assess nutritional status and risk of the pregnant woman (NDoH, 2016:30). Additionally, physical assessment through observations and palpation play a vital role to determine the nutritional status of pregnant women. According to the Maternity Care Guideline (NDoH, 2016:30), a mid-upper arm circumference above 33 centimetres suggests obesity and other conditions like hypertension, gestational diabetes, foetal macrosomia disproportion and shoulder dystocia. (Saaka, Oladele, Larbi and Hoeschle-Zeledon, 2017:4) conducted a study analysis that revealed that women with a MUAC of less than 25 were more at risk with a likelihood of having anaemia than those with a MUAC above 25 centimetres. On the other hand, a MUAC of less than 23cm suggests under-nutrition or a chronic wasting illness. The health practitioner should be vigilant of ruling out an intra-uterine foetal growth restriction on those with a MUAC of less than 23 centimetres, which is one of the leading causes of stillbirths according to the National Perinatal Morbidity and Mortality Committee (NaPeMMCo) (NDoH, 2014:49). This calls for vigilance from midwives to ensure proper interventions to prevent the risk of stillbirth and other pregnancy complications. According to the WHO guidelines (2016:16), there is evidence that women receiving diet and exercises interventions as part of their antenatal care are less likely to experience excessive gestational weight gain.

In this study, the researcher intends to assess records to check if all mothers who delivered stillbirths at a tertiary hospital in Mpumalanga were subjected to a MUAC assessment, and if related to the occurrence of stillbirths.

2.5.2 Screening for anaemia

The WHO (2016:39) states that anaemia is the world's leading cause of disability, and one of the most serious global public health concerns, with the global prevalence of anaemia amongst pregnant women at about 38 per cent. According to the WHO, the highest prevalence of anaemia is in regions of South East Asia at 48.7% and Africa at 46.3%. In some districts of South Africa, one in every five pregnant women has a haemoglobin value of less than 10g/dl (Pattinson, 2005:28). Therefore, it is critical for a midwife dealing with a pregnant woman to be able to skillfully assess in order to identify signs of anaemia as early as possible, so that treatment intervention can be done to save the unborn baby's life as well as that of the mother.

Pattinson (2005:28) refers to anaemia as a low level of haemoglobin, which is a substance that carries oxygen in the blood. Anaemia is associated with iron, folate and vitamin A deficiency. The deficiencies of these elements cause anaemia, which has serious adverse effects which leads to increased maternal, foetal and infant mortality. Lack of folate has direct complications of causing neural tube defects (WHO, 20116:40). A pregnant woman is said to be anaemic when her haemoglobin level is below 11g/dl, but treatment is usually commenced when haemoglobin is below 10g/l. In a study conducted in Bangladesh by (Owais, Faruque, Das, Ahmed, Rahman and Stein, 2013:4) it was found that 20.5% of stillbirths were related to anaemia.

In a study conducted in Namibia, Tshibumbu and Blitz (2016:4) found that 30.5% of women who had stillbirths did not receive supplements. Pattinson (2014:1) states that through appropriate management, some of the deaths caused by these conditions are potentially preventable. The researcher looked into the records of women who delivered stillbirths at a tertiary hospital in Mpumalanga and assessed if they were screened for anaemia and whether this contributed in any way to the occurrence of stillbirths.

2.5.3 Testing of haemoglobin to screen for anaemia

According to Pattinson (2016) on the BANC Plus guideline, haemoglobin must be checked at first contact with the pregnant mother and be repeated at 30 and 38 weeks. A haemoglobin meter is an instrument that is used to measure a patients' haemoglobin. This is done to guard against anaemia that can have a serious risk to both the unborn baby and the mother. When haemoglobin is checked and found to be <8g/dl, it is regarded as severe anaemia and the woman is treated in the hospital. Between >8 and less than <10 is considered to be mild anaemia, treated with Ferrous Sulphate 200mg three times a day and Folate Acid 5mg daily (WHO, 2016:23).In a study done in Ghana (Saaka et al., 2016:4) it was found that the prevalence of anaemia in pregnancy was at 70 per cent. In South Africa, an anaemia prevalence of 42.7% was found (Tunkyi and Moodley, 2017:1) amongst pregnant women in Durban. This was classified as a severe public health concern in Ghana, because an undernourished mother negatively impacts the health of the foetus and is more likely to deliver a low birth-weight infant, significantly increasing its chance of dying (Saaka et al., 2016:4).

Health practitioners should be acquainted with the fact that anaemia is one of the clinical signs of malnutrition and other underlying conditions in pregnancy, therefore this requires diligent efforts in empowering pregnant women on a healthy diet and timeous intervention at the first signs of anaemia.

This will assist in preventing stillbirths, intrauterine growth retardation, premature deliveries and neural tube defects as well as perinatal deaths as indicated by (Hoque, Hoque and Kader, 2009:1) in a study done in KwaZulu Natal. The haemoglobin level of all women must be checked and recorded in a maternal case record at first contact with the pregnant mother and must be repeated at 30 and 38 weeks (BANC).

2.6 ADMINISTERING OF SUPPLEMENTS

Nutrient supplementation is important in pregnancy as most women experience nutritional challenges due to hormonal changes in their bodies. This can lead to inadequate dietary intake that can lead to adverse perinatal outcomes, including stillbirths. (Imdad, Yakoob and Bhutta, 2011:2) found that there was a 41 per cent reduction of neural tube defects with the administering of supplements. It has been concluded in many previous works of literature that a major proportion of anencephaly babies with spina bifida result in stillbirths. Therefore, supplementation with folic acid and iron/folate, calcium, zinc should be viewed as a major step in reducing stillbirths (Imdaad et al., 2011:2). The authors further stated that maternal nutritional status is one of the five factors associated with stillbirths. Calcium helps to prevent gestational hypertensive disorders.

Regarding the recommendations on antenatal care guidelines, the WHO (2016:23) documented that effective communication with pregnant women about their diet and healthy eating habits, including information on the food sources of vitamins, minerals and dietary diversity, is an integral part of preventing anaemia and providing quality antenatal care. This communication will enhance the acceptability of and adherence to the uptake of supplements. Supplements are provided to patients to reduce maternal anaemia, puerperal sepsis, low birth weight and preterm births.

In the BANC PLUS guidelines, Pattinson (2016: C3) recommends iron, folate and calcium supplements from the first ANC visit as a treatment modality to prevent maternal and foetal mortality. Failure to provide the supplements can result in anaemia and neural tube defects, leading to undesirable pregnancy outcomes.

2.7 PREVIOUS MEDICAL HISTORY

Pre-existing medical conditions in pregnancy are a potential high risk to the pregnancy outcomes. These pre-existing conditions include lifestyle diseases being obesity, hypertension, diabetes mellitus asthma and epilepsy, amongst others.

According to the Maternity Care Guidelines (2015:83), hypertension is listed among the top leading causes of both maternal and perinatal deaths. A previous history of hypertension is a call for close monitoring of the pregnant woman. According to the Guidelines for Maternity Care (2015:83), hypertensive disorders in pregnancy are responsible for significant perinatal and maternal morbidity. Hypertensive disorders include chronic hypertension, pre-eclampsia, eclampsia and haemolysis of red blood cells, elevated liver enzymes and low platelets (HELP) syndrome (NDoH, 2015b:83). The exact cause of pre-eclampsia is unknown, with no effective treatment except to deliver the baby, therefore effective management of hypertensive disorders is critical to reducing both maternal and perinatal stillbirths.

Diabetes is a serious growing public health concern in South Africa. (Tshibumbu and Blitz, 2016a) conducted a study in South Africa on diabetes during pregnancy including the extent of social determinant's. In their study, they mention that diabetes is projected to increase from 285 million in 2010 to 592 million in 2035 globally. In this study, they stated that 14 per cent of 92 million women of productive age will have gestational diabetes, which is associated with the risk of miscarriages, stillbirths, prematurity and macrosomia. Therefore, it is crucial to ensure that pregnant women are screened and educated about the implications of diabetes in pregnancy.

In a study done by (Afulani, 2016:6) in Ghana, it was found that having a past miscarriage and past induced abortion is associated with a slightly higher percentage of stillbirths. It was found that there is a 5 per cent chance of pregnant woman who delivered a stillbirth before, to deliver another stillbirth compared to a 1.5% chance of a pregnant woman who never delivered a stillbirth before (Pattinson, 2005:18). The previous obstetric history of a pregnant woman is vital in planning for her progressive antenatal care. Such a woman is referred to a tertiary hospital for further specialised management to prevent a repeat of the previous complication.

It is important for a health care provider to screen the pregnant women for any existing medical conditions through history taking. According to the NDoH (2016:30), this should be done on the first antenatal visit and history should cover any familial and genetic conditions and the use of medications for such. The health care practitioner should employ all her skills using assessment, observation and the results of all conducted test to detect medical conditions so that action can be taken earlier and prevent pregnancy complications that can lead to stillbirths. In this study, the researcher assessed records to determine if women who delivered stillbirths had previous pre-existing medical pregnancy conditions.

2.8 VITAL SIGNS AND BLOOD TEST

The vital signs and a blood test of a pregnant woman form the basis of her future management of the period of her pregnancy. According to (Stevenson, 2016:30), vital signs are measured physiological values which include blood pressure and pulse. Vital signs must be checked during every contact of the pregnant woman with the health care provider. This enables the health practitioner to be able to identify risks and plan for her delivery to take place at an appropriate level of care. Most of the pregnancy risks are picked up from the vital signs and blood tests. According to Pattinson (2016), the performing of tests on pregnant women should only consist of those tests that have been found to be beneficial and must be conducted at the most appropriate time. According to the BANC new guidelines, a woman is supposed to be screened for Hb, Rh, RPR, HIV, and urine on her first visit.

2.9 CHECKING OF BLOOD PRESSURE

According to the WHO (2016:39) guideline, hypertensive disorders during pregnancy are important causes of maternal and perinatal morbidity and mortality. It further states that every quarter of maternal deaths are due to pre-eclampsia and eclampsia, which are a result of high blood pressure. (Bamford, 2013:51) found that hypertension has been found to be a contributory factor to the delivery of stillbirths in 13 per cent of the stillbirths in South Africa. With both the new and old (2005 and 2016 respectively) BANC guidelines, every pregnant woman's blood pressure must be checked during every visit so as to exclude the risk of hypertension, as this has been found to negatively impact on pregnancy outcomes and can lead to the stillbirths. With the stillbirths occurring at a tertiary hospital, the researcher seeks to determine if blood pressure is another contributory factor to the occurrence of stillbirths.

2.10 BLOOD TEST

2.10.1 HIV Blood test

HIV is a human immune deficiency virus that is sexually transmitted through body fluids. If not suppressed through the use of antiretroviral treatment in a mother, it can be transmitted to an unborn child. According to the Saving Mothers Report (NDoH, 2015:1), 91.4% of women dying from non-pregnancy related infections were diagnosed with HIV. As competencies and skills required for rendering care during pregnancy, the health care practitioner is expected to have means and methods of advising about care, treatment and support for the HIV Positive pregnant women including measures to prevent maternal to child transmission (PMTCT) (International Confederation of Midwives, 2011:7). HIV is one of the conditions predisposing pregnant women to premature labour, anaemia and can complicate to stillbirth due to the ill condition of the mother. It is therefore very critical for healthcare practitioners to offer counselling and voluntary testing to all pregnant mothers.

As part of basic antenatal care, the strategy of Prevention of the Mother to Child Transmission (PMTCT) programme was one of the priority interventions in HIV testing, initiation of antiretroviral treatment and provision of MNCWH and Nutrition in South Africa (NDoH, 2012:12). HIV and AIDS have been identified as contributing factors to stillbirths. In the Saving Mothers Report (Pattinson, 2014:10) it is indicated that 65.3% of maternal deaths from non-pregnancy related infections occurred in HIV positive women from 2011 to 2013 and 21 per cent of those HIV positive women were not receiving anti-retroviral treatment. In order to prevent the transmission of HIV to the unborn child, the PMTCT programme was designed to improve the clinical outcomes of the pregnant mother and her unborn baby (NDoH, 2015a:16).

The National Consolidated guideline for PMTCT further states that the main aim of the programme was to reach out to all women before, during pregnancy, labour and delivery and the postnatal period of up to 18 months (NDoH, 2015a:51). All positive mothers receive antiretroviral treatment in pregnancy, which formed a dual benefit for the mother and baby. However, the treatment adherence still seems to be a challenge for some of the women who present to healthcare facilities with complicated opportunistic infections resulting in stillbirths. This is in line with findings of Michalov et al. (2015:11) who stated that there is strong evidence in the relationship between HIV and stillbirth.

2.11 ANTENATAL FOETAL KICK COUNT

Fatal movement counting refers to a method by which the woman quantifies the movement she feels to assess the condition of baby (Mangesi, 2015:71). Pregnant mothers start feeling movement of their babies in utero at about 16 to 20 weeks of gestational age. Once the baby has started moving, the woman is taught on how to use the foetal kick count chart during their third trimester from around 28 weeks(Tveit et al., 2009:4) This is one of the methods that help mothers to detect an anomaly if the movement of baby is reduced, thus assisting the pregnant woman to seek medical attention to prevent complications of stillbirths. This method involves no cost but is a key indicator of the baby's wellbeing. Therefore, all pregnant mothers have to be taught on how to do foetal kick count correctly. In doing so, they can seek early medical attention to prevent stillbirths. In the tertiary hospital in Mpumalanga, most of the women progressing to the delivery of stillbirths arrived at the hospital with a history of lost foetal movement for days up to a week. This was a cause of a concern for the researcher when evaluating the records on the use of the foetal kick count chart by pregnant women who have lost their babies.

2.12 INTRAPARTUM CARE FACTORS

Intrapartum refers to the period when labour starts until the expulsion of the baby and it is defined by (Miller, Miller and Cypher, 2017:318) as something occurring during labour and delivery. Labour and delivery become a time of close assessment and monitoring to ensure a positive birth outcome for both the midwife and the mother. This period of intrapartum care is critical if maternal and perinatal deaths are to be reduced. In the recommendations for intrapartum care for a positive childbirth experience by the WHO (2018:8), it is mentioned that half of all stillbirths and a quarter of neonatal deaths result from complications during labour. Therefore, the importance of diligent monitoring during labour cannot be overemphasised.

According to the Guidelines for Maternal Care in South Africa, the complication of hypertensive disorders in pregnancy creates serious intrapartum risks to both mother and baby. Early detection and treatment of hypertension until foetal viability has been determined and timely delivery will result in reducing death and morbidity from the complications of pre-eclampsia. According to Bamford (2013:51), there is a high proportion of both fresh stillbirths and macerated stillbirths that are unexplained. Amongst both fresh and macerated stillbirths, some are caused by intrapartum asphyxia and birth trauma. According to a strategy for MNCWHN (2012:13), a partogram should be used to monitor every labour, which assists midwives with the early identification of complications and response to prevent the occurrence of stillbirths.

2.12.1 Monitoring of labour using a partogram

A partogram is defined as a graphical presentation of the progress of labour and of the foetal and maternal condition during labour (Open University, 2016:1). According to guidelines published in Maternity Care (2016:47), a partogram must be used during the active phase of labour to enter all observations, fluid intake, maternofoetal condition as well as the progress of labour. The Open University (2017) defines a partogram as a graphical presentation of the progress of labour, and foetal and maternal condition during labour. Assessment and correct plotting of a partogram will alert a health practitioner of when labour starts to complicate because a partogram maps the pathway of progress until delivery. It is therefore in the interest of the researcher to assess records to find out if all women of Emalahleni tertiary hospital were monitored on a partogram and if it were possible to identify risks before the stillbirths occurred.

2.12.2 Mode of delivery

One of the most important things to discuss with the woman during antenatal care is the mode of delivery based on assessment and exclusion of risk factors pertaining to the lie of the baby, the size of the baby and its presentation. However, some pregnancy risks arise during intrapartum care and require the doctor or midwife to change the planned mode of delivery; some emergencies warrant c/section to be done urgently. Some warrant assisted deliveries through vacuum extraction. Therefore, in some studies, it has been found that the mode of delivery can have an impact on the outcome of the baby and can contribute to stillbirths.

To confirm this statement, (Chaibva, 2014:31) noted that there was a prevalence of 15.61% of poor pregnancy outcomes strongly associated with the method of delivery other than a normal vertex delivery. Klein, Kaczorowski, Tomkinson, Hearps, Baradaran and Brant (2011:141) mention that there are challenges of intrapartum care in Vancouver in Canada. It shows that there might be intrapartum factors that can lead to adverse outcomes of births that the researcher seeks to assess in the patient records of mothers who delivered stillbirths.

2.12.3 Delivery complication

At the beginning of labour, one cannot anticipate complications; however as the labour progresses, unforeseen challenges may arise that can result in delivery complications. The complications might include slow progress of labour, poor maternal effort, erupting placenta, intrapartum asphyxia, delayed the second stage of labour to mention a few. Therefore, the continuous management of a

pregnant woman whilst in labour requires a skilful health care attendant who is able to anticipate delivery complications and be able to take a prompt decision to respond to complications and ensure a safe delivery for both mother and baby.

Twenty per cent of the stillbirths in Ghana were found to be associated with delivery complications (Afulani, 2016:4) while Owais et al. (2013:4) found that 13.6% of stillbirths in Bangladesh were a complication of prolonged labour.

In this study, the researcher evaluated the records to determine if there were complications within the intrapartum care. Intrapartum care complications usually result from the delay of the second stage, and other delivery complications such as vacuum extraction, shoulder dystocia and cord prolapse that could have predisposed the delivery to stillbirth in a tertiary hospital in Mpumalanga.

2.12.4 Health care category delivering

Delivering babies is a skill that is perfected with constant practise and experience in the field of midwifery. The midwives, both in community health centres and in hospitals, do the majority of deliveries in most of the facilities. It has been found that the availability of a skilled birth attendant decreases the risk of stillbirths (Adewemimo, Msuya, Olaniyan and Adegoke, 2014:e8). The tertiary hospital of Mpumalanga serves as a referral for complicated deliveries and it will be of importance to determine the category of staff who have delivered stillbirths. This will determine the skills required for further training and education.

2.12.5 Outcome of the delivery

Health care practitioners dealing with pregnant women always have to deal with the very difficult situation for having to explain to a mother that her baby has been born with no signs of life. This requires a compassionate and caring attitude where the health practitioner has to show the stillborn baby to the mother and identify the sex of the baby. This is the saddest moment for both the mother and the midwife when they have to deal with the negative delivery outcome of a lost life.

2.12.6 Sex and weight of the stillborn baby

The sex and weight of the stillbirth is a requirement for a perinatal problem identification programme to monitor the statistics, in order to determine what sex and weight categories the stillbirth falls within. In a study conducted in Bangladesh by Owais et al. (2013:4), it was found that 61,4% of stillbirths are male, however, there was no further detail provided on factors that contributed to this finding. A study conducted by (Jindal, Thakur and Minhas, 2018b:1031) concurred with findings of Owais that stillbirth was more prevalent in males than in females. Therefore, the researcher will assess the records to determine the sex prevalence among stillbirths occurring at a tertiary hospital at Mpumalanga.

2.13 COUNSELLING

Bereavement counselling is defined as the grief counselling that offers engagement (Downe, Schmidt, Kingdon and Heazell, 2013:6) with the client's disequilibrium in relation to lost attachment. Downe et al. (2913:6) found that the interaction of health professionals and bereaved parents plays an important role in families' ability to cope with the loss of a baby. He further mentions that all parents who experience a stillbirth must be offered the highest compassionate care through bereavement counselling.

According to (Meaney, 2016:169), bereavement counselling aims to purposefully facilitate clients regarding learning about their disrupted personal world. Giving birth to stillbirth is a traumatic, life-changing experience for couples. It brings a lot of questions and self-blame and requires a professional approach to deal with the psychological effects. The psychological effects might perpetuate to depression if bereavement counselling is not offered.

Ogwulu et al. (2015; 5) found that the initial shock and disappointment of the loss of a long-awaited baby created a huge gap in parents lives. The authors indicated that the feelings of grief lingered for weeks, months and years following delivery of a stillbirth. Therefore, it is imperative that the health care practitioners understand the emotional cycle that the mother goes through due to the loss of an unborn baby. Professional support should be offered through psychologist and social work services. This study also seeks to determine if support services are provided for women who have delivered stillbirths at the tertiary hospital. Ogwulu (2015:7) identified that if depression following stillbirth is unrecognised and untreated, it can lead to self-harm and in some cases, suicide, and result in much more secondary cost than when bereavement counselling is offered immediately.

2.14 FUTURE BIRTH PLAN

A woman with a history of stillbirths automatically falls into the group of high-risk pregnancy, who need to be advised in terms of future pregnancies. Afulani (2015:6) mentions that there is a 5.4% chance of those with a past stillbirth delivering a stillbirth again as opposed to a 1.5% chance of a mother who never delivered stillbirth before to deliver a stillbirth. According to the study conducted by (Meaney, Everard, Gallagher and O'donoghue, 2017:161), there are disparities of aspirations between men and women following stillbirths. Some women wanted to get pregnant as soon as possible after the stillbirth, whilst the men were reluctant owing to the disappointment and concern over another physical and psychological impact of another pregnancy loss on their lives (Meaney et al., 2016:161). Therefore, it is critical that a woman is advised of family planning for future birth plans and to book early for the next pregnancy so that all risks predisposing her to stillbirths can be excluded.

2.15 CONCLUSION

This chapter addressed health education, which emerged as a cornerstone in the preparation of the pregnant woman for the whole journey of pregnancy to delivery. This was to enable her to make informed decisions about timeously seeking medical help and behavioural changes in lifestyle issues such as smoking, alcohol and drug consumption. Key issues addressed in health education was knowledge of the danger signs of pregnancy as well as diet, exercise and use of a foetal kick count chart. This chapter also covered the screening done on women for blood tests on HIV, haemoglobin, urine test as well as screening for malnutrition and anaemia. In the literature review, it was found that the role of health care practitioners is of paramount importance in building a partnership with the pregnant woman from the day she is booked. This rapport forms the foundation of a relationship of trust and shared responsibility towards a positive pregnancy outcome. The woman will be motivated to attend antenatal care and have all pregnancy risk factors screened to prevent the occurrence of stillbirths. Intrapartum factors were reviewed in terms of use of the partogram during labour as a basis for identification of the risks that could be mitigated to prevent stillbirths and negative delivery outcomes. The mode of delivery was reviewed to see if it influenced the delivery of stillbirths. The category of staff between doctors, ordinary midwives and advanced midwives was reviewed in this chapter. The delivery outcome was assessed in terms of the sex and weight of the stillborn baby and evaluation of notes to assess if all mothers who have delivered stillbirths are offered bereavement counselling as well as advice on a future birth plan as a means to prevent further recurrence of stillbirths thereof. The next chapter present the methodology of the study.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents a discussion of methods that were used to obtain information on the factors that contributed to the occurrence of stillbirths in a tertiary hospital in Mpumalanga. The methodology followed a quantitative non-experimental research design, as the aim was to describe the factors. The study setting is described in detail in this chapter to provide a background of the population used for this research study. The chapter further unveils how the sample was selected using a non-probability consecutive sampling method. The data collection method has been described and presented together with quality control measures that were used to ensure the validity and reliability of the data-collecting tool used.

3.2 STUDY DESIGN

Brink et al. (2015:96) describe a research design as the set of logical steps taken by the researcher to answer the research question that forms the blueprint of the study. Positivists use an orderly scientific approach with disciplined procedures in seeking their knowledge (Polit & Beck, 2012:12). This study used a quantitative, retrospective, descriptive approach in line with a positivist strategy to determine factors contributing to the occurrence of stillbirths at a tertiary hospital in Emalahleni in Mpumalanga province.

3.2.1 Quantitative research design

Quantitative research design has been the principal method of design used when considering scientific investigation in nursing. According to (Vickers and Offredy, 2010:80), quantitative research design is a formal, objective systematic process for obtaining quantifiable information in a world, presented in numerical values. This design was chosen because it was directly linked to the ability to answer the study question of “what are the factors that contribute to the occurrence of stillbirths” in a tertiary hospital. According to Offreddy and Vickers (2010:81), it was believed that the quantitative designs produce a much sounder and more reliable knowledge base because it is

thought to produce hard science that involves rigour, objectivity and control. The researcher used the quantitative research design for this study, believing that the factors contributing to stillbirths can be quantified and be measured to give an understanding of the occurrence of stillbirths.

The approach for this study was performed within a positivist theoretical framework, following the principles of a positivist where the researcher's values, feelings and personal perceptions were not allowed to be brought to the measurement (Polit & Beck, 2012:12) of the reality of occurrence of stillbirths. Quantitative researchers believe that all human behaviour is objective, purposeful and measurable. Within a quantitative research design, there are many methodologies of approaches that can be used, including either an experimental or a non-experimental design. For this research project, the researcher used a non-experimental approach with a descriptive retrospective design.

3.2.2 Non-experimental designs

According to Polit and Beck (2012:55), non-experimental research is where the researcher is a bystander. He or she collects data without intervening or treatment of the subjects. Brink et al. (2015:112) mention that the major purpose of non-experimental research is to describe the phenomenon, explore and explain the relationships of the variables as they present. Botma et al. (2015:82) define non-experimental research design as for where a researcher does not participate in data gathering but is at a distance. The same principle was applied in this study, where the researcher collected data from the records of women who delivered stillbirths in a tertiary hospital in Mpumalanga without intervening in any way. This made the results to be objective and truthful. The records were analysed post-delivery of stillbirths; hence a retrospective design was used.

3.2.3 Retrospective design

Polit and Beck (2012:224) define a retrospective design as one in which a phenomenon existing in the present is linked to the phenomenon that occurred in the past. In this study, the researcher undertook a retrospective design to seek knowledge and understanding on the antenatal and intrapartum factors that influence the delivery of stillbirths. The study involved the reviewing of records of the woman that have already delivered stillbirths in a tertiary hospital in Mpumalanga, hence the factors were reviewed after the phenomena of stillbirths had occurred. These factors were presented using a descriptive design.

3.2.4 Descriptive design

Descriptive research is described by Polit and Beck (2012:226) as research that involves observation, describing and documenting aspects of a situation as it naturally occurs. It leads to the description of trends, processes and patterns and it is further believed to be intensive in defining health-related conditions and the development of effective interventions thereof. For the purpose of this study, antenatal and intrapartum factors were described to show how they affect the occurrence of stillbirths in a tertiary hospital of Mpumalanga. This design enabled the researcher to unpack and determine which factors contribute to the occurrence of stillbirths in a tertiary hospital in Mpumalanga through trends and frequency distribution.

3.3 STUDY SETTING

The study took place in a tertiary hospital in Mpumalanga province at the Nkangala district. According to midyear estimates (2013), the total population of Nkangala District is 1,357,744, made up of 50,6% females. This hospital does not cater only for Nkangala District population but also covers Gert Sibande district, which has a population 1,056,179 consisting of both males and females, and furthermore some of Ehlanzeni district patients. The catchment population of this tertiary hospital consist of six sub-districts that have 89 PHC facilities, seven district hospitals and 22 mobile clinics. The hospital has 400 beds and it receives maternity patients from all above-mentioned areas. Some of these pregnant mothers deliver the stillbirths, which are of great concern.

The tertiary hospital is situated in a semi-urban and semi-rural setting, in a town surrounded by many informal settlement and farms that are serviced by mobile clinics who also refer to the hospital. The maternity ward in this hospital has 37 beds comprising of antenatal, delivery and high care patients, with 39 postnatal beds. At times, the tertiary hospital experiences overflow of patients both referred as well as self-referral patients bypassing primary health care facilities. According to the level of the hospital, it is supposed to be delivering only high-risk pregnant mothers who present with pregnancy complications, however, most patients prefer to deliver there because of availability of doctors and expert skills of specialists.

3.4 STUDY POPULATION /UNIT OF ANALYSIS AND SAMPLING

3.4.1 Population/Unit of analysis

The population is the entire aggregation of cases in which a researcher is interested in Polit & Beck, (2012:273). In this study, a unit of analysis was all hospital records of women that delivered a stillbirth at a tertiary hospital in Mpumalanga. The maternity unit had an average of 500 admissions and 380 deliveries per month, inclusive of an average of 16 stillbirths per month with a stillbirth rate of 42 per 1000 births (MPDoH, 2016). Records were selected from those that have delivered within the period of January to December 2015 and 2016 inclusively as units of analysis.

3.4.2 Sample

According Pope and Stanistreet, (2017:133), a sample is defined as a group of individuals taken from a larger population. These are usually a subset of the population that the data will be collected from then generalised to the entire population. The sample of this study was records of women that have delivered stillbirths from all women (population) who have delivered babies in a tertiary hospital in Mpumalanga province. The researcher ensured sample representation by using a non-probability consecutive sampling method.

3.4.3 Sampling method

The researcher took a sampling plan that enabled her to achieve a statistical conclusion validity that led to a generalisation of results. According to Polit and Beck (2012:275), Sampling is defined as a process of selecting cases to represent an entire population. Careful consideration was applied to rule out biases by selecting an appropriate method suitable for a retrospective descriptive study. Consecutive sampling was chosen because all files of women who delivered stillbirths who met inclusion criteria in the tertiary hospital within January 2015 to December 2016 was considered. This ensured equal opportunity for each file of every woman who had a stillbirth within the above-mentioned timeframe, hence biases was eliminated in the process. All women's records that met the eligibility criteria were selected.

Polit and Beck (2012:279) define a consecutive sampling method as a recruitment strategy of all the people who meet eligibility criteria over a specified time. Files were requested from the Department of Patient Administration of the hospital with a formal request form. The records of all women who

have delivered stillbirths from January 2015 to December 2016 were purposefully selected from all files of women who have delivered in the tertiary hospital in Mpumalanga province were used. The researcher considered a period of two years as sufficiently long enough to deal with potential biases related to seasonal and other time-related fluctuations, as highlighted by Polit and Beck (2012:279).

3.4.4 Calculation of sample size

The researcher was quite sensitive to achieve a statistical conclusion validity of the results in terms of the sample size. The statistician was consulted to ensure sample size would meet all criterions to yield representatively correct results for the population used. The sample size was calculated using an average of 30 per 1000 stillbirth rate in the tertiary hospital in Emalahleni sub-district, with them to aim of bringing it down to the national target of 17 per 1000 births. The sample size required is 1162 files, calculated using STATA 14. However, in view of cost implications and time, the researcher was advised by the statistician to select 400 files from a window period from January 2015 to December 2016.

3.4.5 Eligibility criteria

Eligibility criteria refer to the criteria of who is in the selected population. This is further defined by common characteristics that make the group similar to the sample. The researcher considered her definition of the study construct of stillbirths to be measured, to ensure that the sampled population yield the intended results that could be generalised to the population at large. The eligibility criteria were records of women who have delivered stillbirths in a tertiary hospital in the Mpumalanga province, who were included. The pregnancy must have been viable and should be above 28 weeks' gestational age as per the construct definition. Records of 'born before arrival' babies were not included.

3.5 DATA COLLECTION

Polit and Beck (2012:725) define data collection as the gathering of information to address a research problem. According to Brink et al. (2015:147), the process of data collection is of critical importance to the success of the study and he further states that without high-quality data collecting techniques, the accuracy of the research conclusion can be challenged. A plan for data collection was made according to the data collection process, as described by Brink et al. (2015:147) below.

3.5.1 How was data collected?

The researcher reviewed the literature to search for an appropriate existing data-collecting tool with a similar or equal structure of the specific construct to be measured. However, the researcher could not find one with all the factors that needed to be measured. Finally, a tool was constructed with extracted factors from a tool from Patience Afulani, who did a similar study in Ghana and combined that tool with factors extracted from the MPDoH (2015) maternal case record. Guidance from the literature review was sought to identify the implications of the identified factors on pregnancy and its outcome, especially the antenatal factors as the antenatal care ensures the best possible pregnancy outcome (Mokhondo, 2010:11). Records were selected according to the inclusion criteria. It took 30 minutes to an hour to complete the data-collecting tool based on factors contributing to the occurrence of delivery of stillbirths in a provincial hospital in Mpumalanga.

3.5.2 What data was collected?

As a researcher, it was important to understand exactly what type of information was necessary to answer the research question on factors contributing to the occurrence of stillbirths. Therefore, potential factors were identified as some socio-demographic, antenatal and intrapartum factors that could predispose a woman to deliver a stillbirth. The mentioned factors formulated the body of the data-collecting instrument discussed below and remained the body of the research questions as well.

3.5.3 Who collected the data?

The researcher collected the data as the principal investigator of factors contributing to the occurrence of the stillbirth in a tertiary hospital in Mpumalanga. This ensured consistency in data collection and reporting.

3.5.4 Where was the data collected?

The data was collected from the files of women who delivered stillbirths in a selected tertiary hospital in Mpumalanga. It was collected onsite at the tertiary hospital, following permission granted by the Hospital CEO and the Provincial Department of Health. Files were retrieved from the admissions filling room in packs of month to month with assistance of a ward clerk controlling admissions and discharges of all maternity women. A name list control tool was used for both retrieving and return of files to the admissions filing room. Average of 15 files were done per day depending on accessibility of information in the file.

3.5.5 When was the data collected?

The data was collected from September 2017 to December 2017 and submitted for statistical analysis to the statistician.

3.6 MEASURING TOOLS/DATA COLLETING TOOL

A structured data-collecting tool was used as an instrument for collecting information in this study. It was developed based on the literature-consulted.The data collecting tool had been adapted from an existing questionnaire used by Afulani (2016:6). The questionnaire was used in a study to determine "Determinants of stillbirths in Ghana: does the quality of antenatal care matter?" In her study, Afulani used interviews on a large scale, covering different regions of Ghana. Questions like delivery in other facilities as well as household income index were excluded because it cannot be measured using the local maternal case record. Factors included but not on Afulani's questionnaire for this tool were extracted from the Mpumalanga Department of Health Maternal Case record (2015) and BANC Plus Guidelines (Pattinson, 2016:37).

The reason for using some of the data from the data collecting instrument of Afulani was that there were similarities in Ghana's model of antenatal care to the one used in South Africa (BANC), as adapted from the World Health Organisation (2016:2). An email was sent to Patience Afulani to request permission to adapt some of her factors into the data collecting tool constructed by the researcher. For this study, the data collecting was tool was divided into three sections, namely A, B and C.

3.6.1 Section A

The first section covered demographic and socio-economic factors. These included age, marital status, educational background, residential area, population group, identity and lifestyle issues.

3.6.2 Section B

The second section covered antenatal factors contributing to the occurrence of stillbirths in a tertiary hospital. Many variables were measured under antenatal care as the outcome of a pregnancy is highly determined by antenatal care. Variables measured under antenatal care composed of the booking status of the mother and the trimester during which she attended her first antenatal care as her first booking date. The booking date was important, as early booking allows screening, treating

and managing pregnancy risk to prevent pregnancy complications and stillbirths. The number of the antenatal visits was also considered to be an important variable, as Mokhondo (2010:2) mentions that late initiation or no antenatal care was found to be a patient avoidable factor which contributes to perinatal stillbirths.

Previous history and previous obstetric history was assessed, as it was found by Saade (2011:6) that pregnancy history was the strongest indicator of stillbirths. In this section, vital signs including blood pressure, urine testing and mid-arm circumference were assessed, as well as blood tests for HIV and syphilis. The foetal kick count is an important measure of foetal wellbeing, therefore this was also assessed from the records of mothers who had stillbirths and did do their foetal kick count. The variable of HIV was included on the instrument as well as when anti-retroviral treatment was started.

3.6.3 Section C

Section C of the data collecting tool consisted of 11 variables, which included the status of the baby at the admission based on the initial assessment, monitoring of labour using a partogram, mode of delivery, and delivery complications and the category of the staff that delivered the woman. The section further described the pregnancy outcome in terms of the sex of the stillbirth and the weight thereof. Bereavement counselling was placed as an assessed variable because Heazell et al. (2016:40) found that 40 per cent of women is put on antidepressant drugs due to psychological implications post stillbirth delivery. This was included so that the woman can be aware of avoidable factors for future pregnancies to prevent recurrence of stillbirths and enhance her coping mechanism. The data-collecting tool for this study is included in this dissertation as Annexure B.

3.7 DATA COLLECTING TECHNIQUE

The researcher requested files from the Department of Patient Administration, following approval from the hospital management and Mpumalanga Department of Health. The maternity register was reviewed to identify file numbers of all mothers who delivered stillbirths from January 2015 to December 2016. The file numbers were used to request the files from patient administration for the researcher to review them, using a data-collecting tool. The researcher piloted the data-collecting instrument on 15 files, as advised by the statistician. The researcher reviewed the files administering the data-collecting tool to extract information on factors contributing to the occurrence of stillbirths on all the files of a woman who have delivered stillbirths in a tertiary hospital in Mpumalanga province

from January 2015 to December 2016. Safekeeping of the completed data collecting tools was ensured by locking them at the University of Pretoria in the Nursing Science Department by the supervisor.

3.8 VARIABLES

Polit and Beck (2015:102) define variables as qualities, properties or characteristics of persons, things or situations that are manipulated or measured in research. The concept under study varies from one person to the next. In this study, not only pregnant women who delivered stillbirths in the tertiary hospital in Mpumalanga were included, but some also had live births, hence stillbirths were considered to be a variable. The variables of interest for the researcher in this study were the stillbirths, socio-demographic, antenatal and intrapartum factors. Furthermore, as a positivist, the researcher believes stillbirths do not just occur without reason but believes that there are factors that can be measured that contribute to the stillbirths. With this assumption, the researcher ascribed sociodemographic antenatal and intrapartum factors as causes of the stillbirth phenomenon, thus called the independent variables and stillbirth being dependent on these factors, as a dependent variable.

3.8.1 Independent variable

Socio-demographic, antenatal and intrapartum factors are the independent variables as they are the presumed cause (Polit & Beck, 2012:51) for contributing to the occurrence of stillbirths in a tertiary hospital in Mpumalanga.

3.8.2 Dependent variable

Polit and Beck (2012:51) defined dependent variables to be a presumed effect, which in this study stillbirths was regarded as an effect of socio, demographic, antenatal and intrapartum factors.

3.9 QUALITY CONTROL

It is in every individual's right to receive data that has satisfied the requirement to be considered worthy of a useful contribution to the evidence and for improving the body of knowledge about reality. Thus, every researcher tries to collect information and produce results with minimum measurement error. This is largely depended on the instrument that has been used to collect data. This study has undergone thorough stages of ensuring its quality, in terms of validity and reliability. From the

perspective of a positivist approach, the data has to be reliable so that even if someone else uses the data-collecting tool, it will yield the same truth and results.

Quantitative studies derive data from measurement that entails assigning a number to present the amount of an attribute present in an object or person (Polit & Beck 2012:328) and it is critical that the measures obtained correspond with the real world. Therefore, a pilot study was done to test for the data collecting instrument's reliability to ensure that the data obtained was of high quality, valid and reliable.

3.9.1 Instrument validity

Brink et al. (2015:165) state that validity seeks to ascertain whether an instrument accurately measures what it intends to measure. Pope et al., (2017:452) define validity as the capacity of a test, instrument or question to give a true result. The data-collecting tool was piloted on a small scale and the findings thereof were compared with the findings of the major study to measure validity and consistency. The instrument was submitted to a professional statistician and the supervisors who evaluated the suitability and accuracy in relation to the study and determined the validity of the tool.

3.9.2 Face and content validity

Polit and Beck (2012:291) define face validity as for whether the instrument looks like it is measuring the target construct. Content validity refers to the degree to which an instrument has an appropriate sample of items for the construct measurement (Polit & Beck, 2012:336). For the purpose of this study, presentation of the measurement instrument to a team of health science experts at the University of Pretoria was done to assess if all criterions used to measure the constructs clearly. The expert teams included the statistician, lecturers in midwifery at the University of Pretoria and advanced midwives in the clinical practice.

3.9.3 Instrument reliability

Polit and Beck (2012:291) define the instrument reliability as the consistency with which it measures the target construct. Within a positivist approach, the researcher believed that if different people use this instrument repeatedly on the sample of the same population, it should yield the same results. The statistician assessed the data-collecting tool for quality control.

3.9.4 Pilot study

The researcher tested the reliability through a pilot study of which the outcomes were compared with the real study. Fifteen files from the sample were used for the pilot study as advised by the statistician and the results thereof will be sent to the statistician but not be included in the main study. To ensure data quality and instrument validity, the researcher will pilot the data-collecting tool on a small scale to ensure that it measures the intended variables before it is used on a larger scale.

3.10 DATA ANALYSIS

Polit and Beck (2012:725) define data analysis as the systematic organisation and synthesis of research data. The main aim of data analysis was to find frequency distribution, central tendency and measures of a relationship through a descriptive data analysis approach. The data was presented in descriptive summary statistics in terms of frequencies, proportions and associated 95 per cent confidence interval by grouping according to demographic characteristics.

The prevalence of stillbirths was evaluated and associated factors were determined using Chi-Square analysis relating to prevalence with all factors. Furthermore, Kruskal Wallis was used to comparing proportions between demographics and logistic regressions. The statistical tool Stata 14.1/15 was used to identify factors associated with the occurrence of stillbirths in a tertiary hospital.

3.11 CONCLUSION

In chapter 3 a discussion of the methodology used in the study was presented. A non-experimental retrospective descriptive design was used. The study population and unit of analysis was described with an indication of sampling method. This chapter also unveiled how the data was collected, what data was collected, by who, where and when, with specific emphasis to the methodology of retrospective descriptive design approach. The chapter also addressed the quality control techniques to ensure validity and reliability of data collecting tool and the information collected as well. In the following chapter an in-depth discussion of findings is presented together with illustrative graphs.

CHAPTER 4
DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

In this chapter, the analysis and an in-depth discussion of the results are presented as well as the drawing of meaning from the findings. This chapter further seeks to analyse the obtained information from the records using the data collection tool. A data collecting tool was included in this chapter. Each variable on the data collecting tool is systematically and critically analysed as well as compared to other studies already conducted in other areas to deduce differences and similarities of findings to find the meaning of the results of this study. This chapter will seek to answer the objective of the factors contributing to the delivery of stillbirths in the mothers from Mpumalanga tertiary hospital which was the primary objective of the study. A conclusion will be drawn on the factors that are significant in the findings and recommendations will be made.

4.2 DESCRIPTION OF THE UNIT OF ANALYSIS

Files of 341 women who had delivered stillbirths were sampled using a maternity register. Out of the 341, only 231 met the inclusion criteria for data collection, capturing and analysis. Of the total 341 files, 42 were excluded because the pregnancies were below 28 weeks with stillbirths estimated at less than 800g, 35 files were also excluded because the maternity case records which a key information tool was for data collection was missing. Seven more files were excluded because the stillbirths were born before arrival in the hospital which was an exclusion criterion for this study. Files were excluded based on the inclusion criteria which have been stated in Chapter 3. The 231 files which met the inclusion criteria were then used to collect information on socio-demographic, antenatal and intrapartum factors using a data collecting instrument.

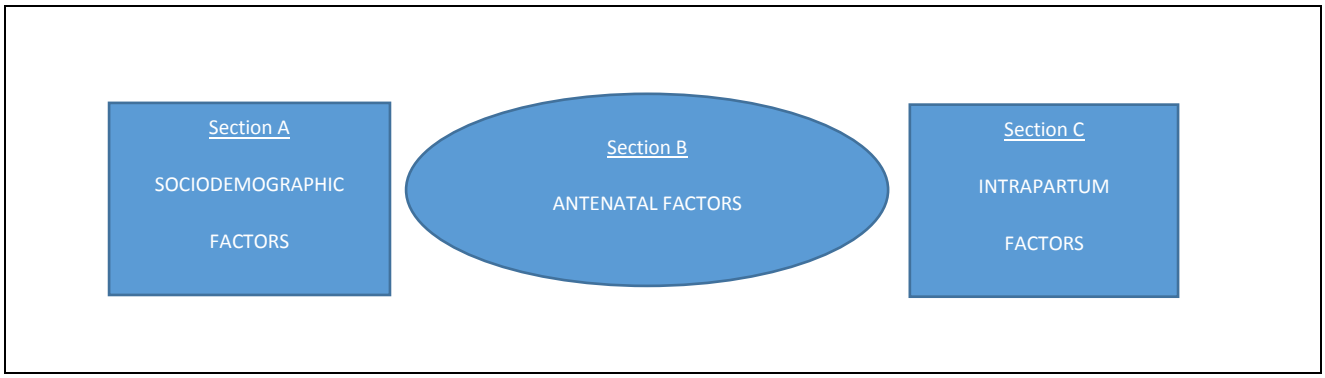
Raw data was collected from the 231 files using data collecting instruments. Coding of the factors was done to enable consistency in capturing and then coded information was entered in a spreadsheet using excel programme. The expertise of the statistician was sought for aggregation of captured data to transform it into meaningful information which was thereafter given back to the

principal researcher for analysis discussion and interpretation of the results and findings. Results were further analysed testing proportions association and significance differences using Fisher Exact Programme.

4.3 DISCUSSION OF RESULTS

The discussion will follow the structure of the data collecting tool which has 3 main sections namely, sociodemographic factors, antenatal factors and intrapartum factors as shown by Figure 4.1.

FIGURE 4.1: SOCIODEMOGRAPHIC FACTORS, ANTENATAL FACTORS AND INTRAPARTUM FACTORS



4.3.1 Section A - Socio-demographic factors

Socio demographic factors are at large associated with predisposing factors of stillbirth especially in impoverished countries where women are challenged with social disparities. Jindal, Thakur and Minhas, (2018a:1030) also agree that some of the reproductive outcomes are associated with a degree of social deprivation. Similar findings have emerged from this study where the majority of the women who have delivered stillbirths at a Hospital in Mpumalanga fall within a category of single, unemployed and mostly from the black community. The following discussion will unfold some of the different demographic factors assessed in this study and results thereof.

4.3.1.1 Age

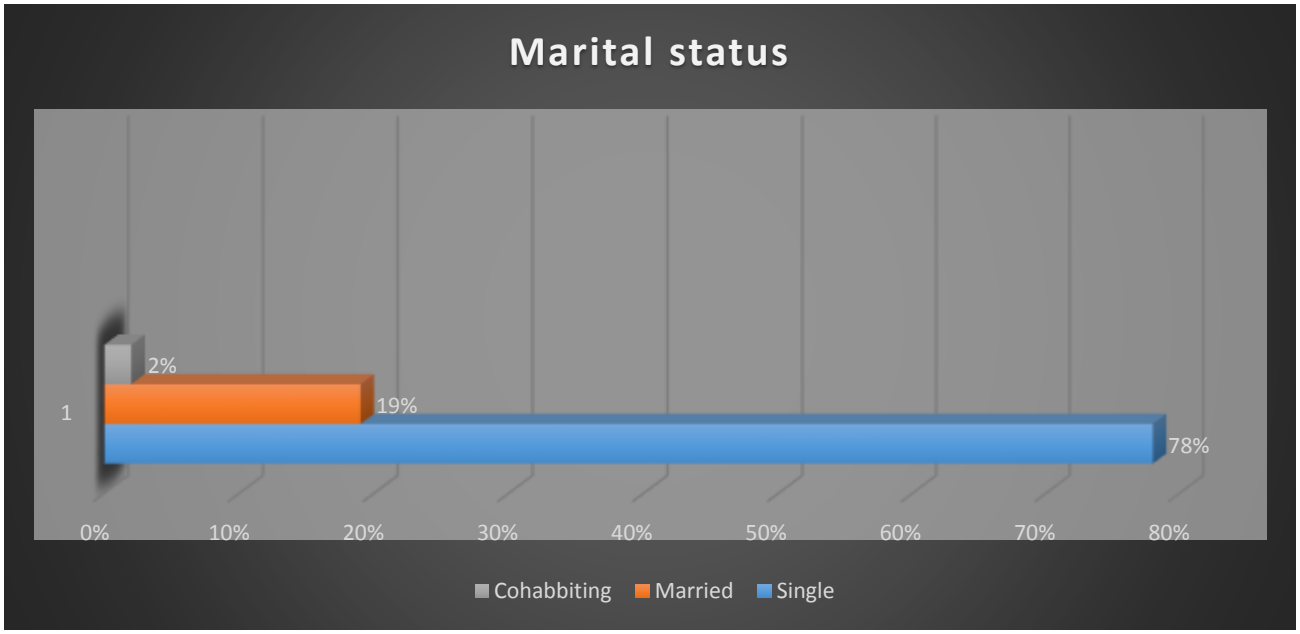
In this study, the majority of the women who had stillbirths were in the category of childbearing age of 20 to 35 years. The results showed that 74 per cent were between 20 and 35 years of age, 13 per cent were teenagers with the youngest being 13 years and 19 years, the women of 40 years and

above were 13 per cent of the total mothers with the stillbirths. It has been found in a study conducted by Chuwa, Mwanamsangu, Brown, Msuya, Senkoro, Mnali et al., (2017:6) in Tanzania that age has an impact on the delivery of stillbirths. Authors revealed that socio-demographic factors contributed to the delivery of stillbirths, women who had stillbirth for the first time in their pregnancy were older (P<0.001) residing in rural areas (P<0.001), illiterate (P<0.001) and unemployed (P<0.001) compared to women with live births. Similarly, to findings of this study is the results of Jindal et al. (2018:1031) in a study done in India where it was found that the majority 77 per cent of women with stillbirths fell within the group of 20 to 30 years, which is considered to be within the childbearing age. Carolan, (2013:483) did a study in Australia to evaluate advanced maternal age and perinatal outcomes. Her results were contrary to many findings that usually reveal advanced maternal age as an attributed factor (Lean, Derricott, Jones and Heazell, 2017:12) to stillbirths. She found that there were 0 per cent stillbirths in for women with advanced maternal age of >45 years in the 10 studies that were reviewed from hospitals (Carolan, 2013:243). Therefore, it can be concluded in this study that stillbirth occurs at any age as majority 74 per cent of women that delivered stillbirths were within the childbearing age as compared to14 per cent of the women above 40 years. Education about pregnancy risk factors must be given across all ages to prevent more stillbirths. There was no significant association between the age groups and delivery outcome of stillbirths using a test from Fisher's exact p-value = 0.516. Of concern is the stillbirths of teenagers, especially a 13-year-old, the trauma of delivering a stillbirth at that tender age is a daunting experience which becomes more tragic with the outcome of a stillbirth. A policy on implementation of the Child Protection Act needs to be directive to hospital protocols when a child of 13 years is admitted for delivery, with clear roles and responsibilities of family and health workers to protect her rights and future.

4.3.1.2 Marital status

Marital status is defined by Zeitlin, Saurel-Cubizolles, Ancel and Group, (2002:1) as either in legal terms (married, separated, divorced, widowed or single) or by mother's relationship with the father (married, cohabiting, single mother). The researcher applied the same understanding of the mentioned definition in the assessment of marital status for this study. In the current study, women had the choice of selecting either married, single, divorced, cohabiting or widowed under marital status. In this study, it was found that 181 (78%) of unmarried women who delivered stillbirth compared to the married 43 (19%) out of a total of 231 women 4 (2%) cohabiting and 1 (0.4%) widowed. Only 2 (1%) of the total 231 did not record their marital status. The marital status trend is illustrated below in Figure 4.2.

FIGURE 4.2: THE MARITAL STATUS TREND AMONG WOMEN WHO DELIVERED STILLBIRTHS IN EMALAHLENI



Studies have shown that unmarried women face greater economic insecurities, lack of social and emotional support. Zetlin (2002:2) found that unmarried women go through acute life stressors and separation from partners compared to married women in a study done in France. Similarly, (Balayla, Azoulay and Abenhaim, 2011:1) did a study on stillbirths in the United States and found that there is a risk of stillbirth in an unmarried woman due to lack of psychological support, unstable relationships and risky behaviours such as alcohol and drug abuse. Supporting results were also found in a study done by Shapiro, Bushnik, Wilkins, Kramer, Kaufman, Sheppard et al., (2018:5) which confirmed findings of this current study that unmarried mothers had a substantial elevated risk for stillbirths in a study done in Canada.

The findings of the current study are in agreement with the above-mentioned studies done in the United States of America, France and Canada showing similar findings of a high prevalence of unmarried women who delivered stillbirths. In the tertiary hospital, the number of the unmarried women are almost double the number of the married women who delivered stillbirths. The number of unmarried woman reveals a social injustice where the majority of woman are vulnerable to many challenges. Amroussia, Hernandez, Vives-Cases and Goicolea, (2017:2) revealed in Tunisia that unmarried women are prone to abuse and receive limited social and economic support as well as the stigma surrounding taboo of premarital sex and have to further deal with the pain of pregnancy

loss alone. Further studies can be done to explore experiences of single mothers in dealing with a stillbirth alone.

4.3.1.3 Educational background

Educational background was one of the factors to be assessed in this study, however as it was not recorded in all the maternal case records, it had no score. Following consultation with the statistician, the educational background was removed due to lack of value in statistical significance as all unit of analysis had 0 on it due to lack of documentation. Kujala, Waiswa, Kadobera, Akuze, Pariyo and Hanson, (2017:68) mentioned that in several studies there has been no proven association of stillbirths to educational background however in the current study the element of education was not assessed.

4.3.1.4 Residential area /referring subdistrict

The study revealed a pattern of stillbirth distribution where the majority of the women who had stillbirths came from the local Emalahleni sub-district making a total of 68 per cent (156) as compared to the total of 18 per cent (41) which was comprised of the other 5 sub-districts within Nkangala District. Of importance to note is the 15 per cent (34) of stillbirths from the Gert Sibande district which are carried by Nkangala District. The conclusion of proportion distribution might be an indication of lack of a level one hospital for the Emalahleni subdistrict hence the majority of the women deliver at the tertiary hospital even though they could have delivered at the district hospital. Consideration of a District/level one Hospital would be ideal to enable a hospital to deal with its own level of patients, which could have an impact on the reduction of stillbirths. According to the Government Gazette (2012:5), the tertiary hospital shall receive referrals from regional hospitals however the tertiary hospital has received the majority of its patients from the Community Health Centre (CHC). Below is a figure illustrating the majority stillbirths emanating from Emalahleni compared to the other combined Nkangala subdistricts.

Figure 4.3: DISTRIBUTION OF STILLBIRTHS PER SUBDISTRICT

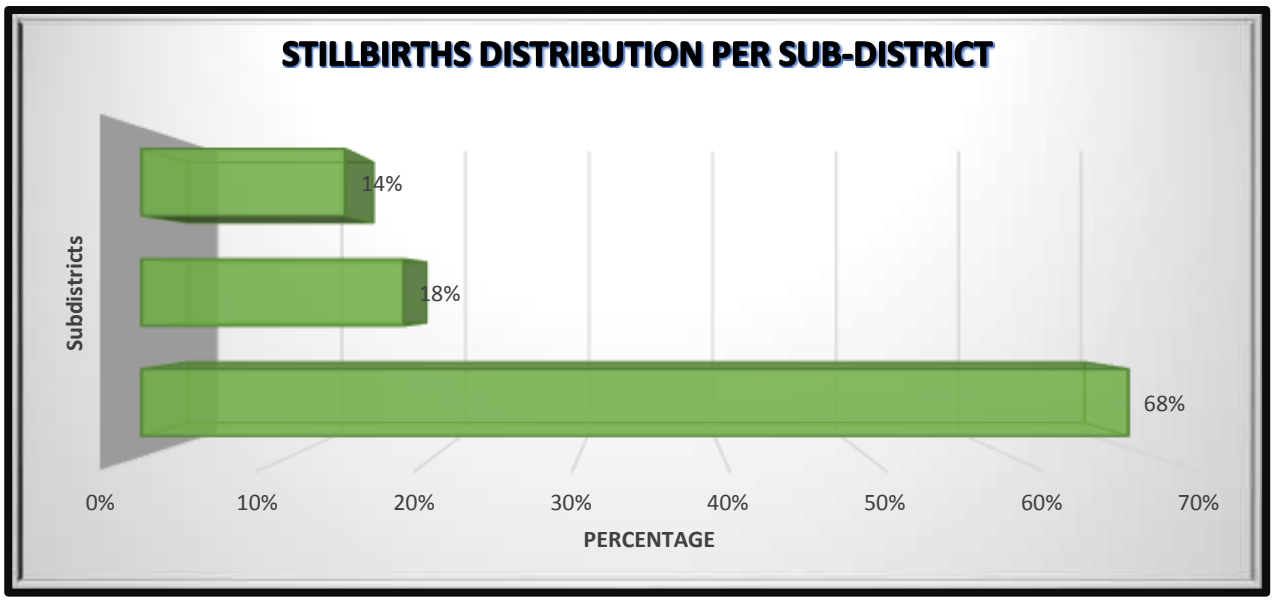


FIGURE 4.4: ILLUSTRATES THE SIX SUB-DISTRICTS THAT REFER TO THE TERTIARY HOSPITAL IN MPUMALANGA

The 231 files were from a woman coming from the above-demonstrated districts referral pathway. It is of importance to note that all the listed subdistricts fall within Mpumalanga province and all use a

standardised maternity case record and practise the same delivery package of Basic Antenatal Care. This gives non-biases in measuring standard of care on the factors contributing to the delivery of stillbirths across the referring subdistricts. This is because Maternity Care Guideline (2016:29) clearly stipulates that all pregnant women shall receive and use a Maternity case record which is a standardized pregnancy principal record and therefore there is uniformity in care across all maternal health care units.

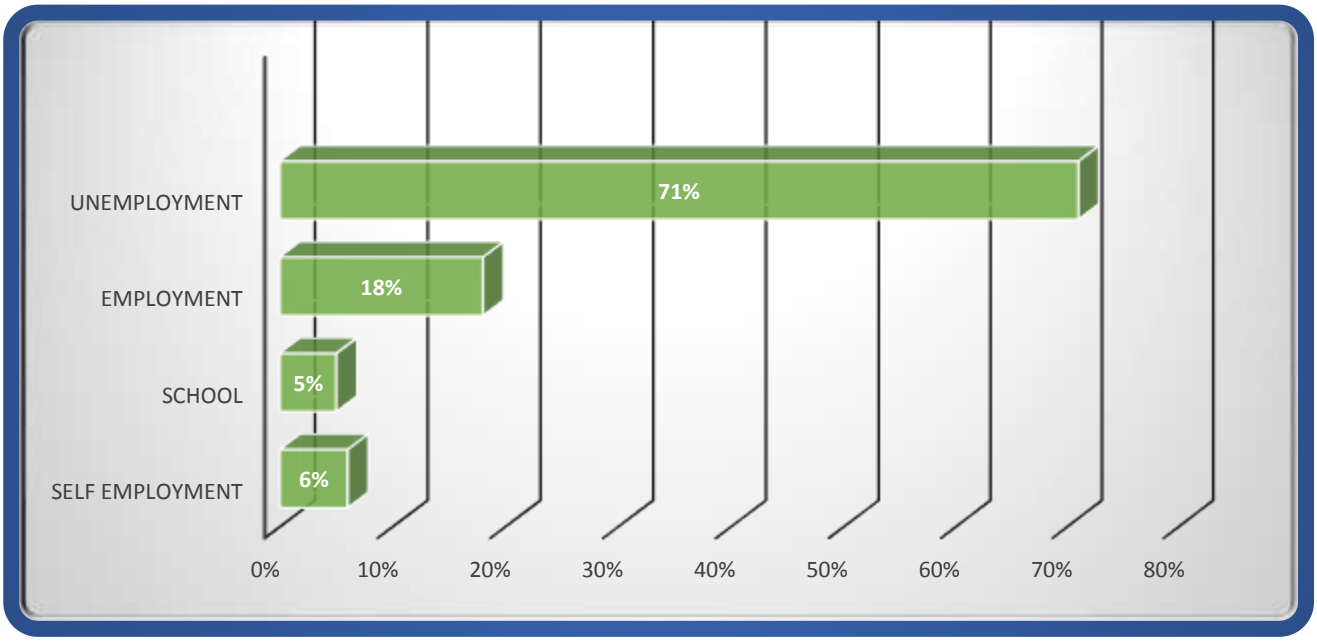
4.3.1.5 Occupation/Employment History

In this study, records were searched for data on the occupation status of the women. It was found that most of the women who delivered stillbirths are in the category of unemployed. The study revealed that 71 per cent (164) were unemployed compared to only 18 per cent (41) who were employed, 6 per cent (13) being at school and the rest self-employed. However, in 5 per cent (12) of the records employment was not recorded. Figure 4.5 depicts a picture of the unemployment rate of women of the tertiary hospital who delivered stillbirths. These results are similar to the findings of a study done in Northern Tanzania by Chuwa et al. (2017:5) where 66.6% of the woman who was unemployed had stillbirths compared to the 33 per cent of employed woman.

Employment has emerged in some studies as one of the sociodemographic factors associated with stillbirths. Jindal et al. (2018:1030) conducted a study in India where it is mentioned that some stillbirths are a result of social deprivation, of which unemployment is part of. Twenty-five per cent of the women in a study done in a Nigerian Hospital indicated financial constraints as a factor for women to access medical help (Ndidi et al., 2010:50) because of high antenatal and delivery fees. However, in South Africa, women do not pay for both the antenatal and the delivery services. Maternal health services are free and accessible unlike in Nigeria where fees are paid and access to health services has therefore been found to contribute to stillbirths. In these studies, most of the woman face challenges ranging from access to health services and the availability of timeous medical intervention especially in low-Income settings and rural areas (Kujala et al. 2017:68). Ongeso, Lukorito and Kabo, (2018:47) also reiterate the findings of this current study, in their conclusion from a study in Nairobi, Kenya. They agree that the majority of stillbirths were from mothers from a low socioeconomic background. The findings on this current study on the high rate of unemployment of 71 per cent of the mothers who delivered stillbirths is similar to a study done by Ahsan, Ayub, Gul, Zafar and Khan, (2017:42) where it was found that 96 per cent of the pregnant women in Pashwar, Pakistan were housewives which shows serious marginalisation of the women across the globe. Women still suffer inequality in terms of employment and later suffer tragedies of stillbirths.

The high rate of unemployment among the women who delivered stillbirths is apparent political marginalisation of women in the labour market which remains a social challenge. This means that if stillbirths are to be reduced there should be a collaboration of different ministerial sectors, health with department of labour and economic empowerment together addressing challenges faced by women in the society. Policies of Gender Mainstreaming should be implemented to enable women to take rightful positions in society and have the ability to care for their health and decrease stillbirths.

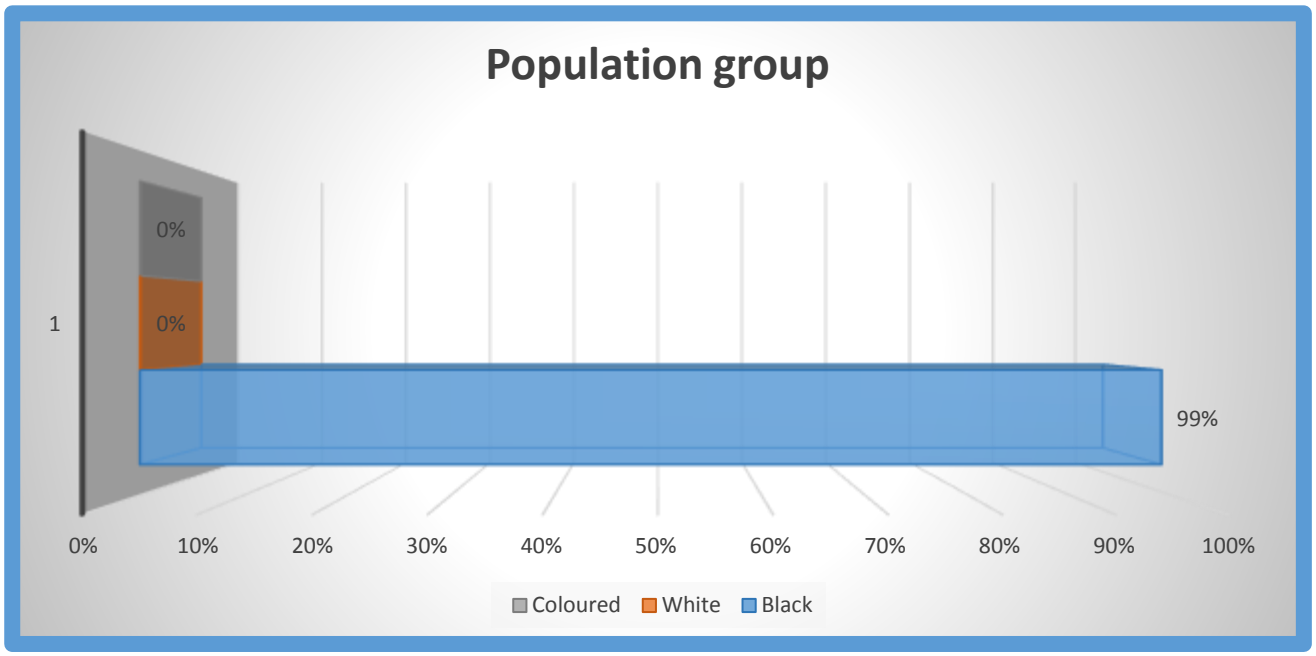
FIGURE 4.5: THE OCCUPATION/EMPLOYMENT TREND AMONGST WOMEN WHO DELIVERED STILLBIRTHS



4.3.1.6 Population Group

Population group disparities remain a sensitive topic, however the reality of disparities is undisputable. In this study, results showed that 99 per cent (229) of the women who had stillbirths were from the black population group compared to 1 per cent (2) of white and coloured population. The disparity is illustrated in Figure 4.6.

FIGURE 4.6: POPULATION GROUP TREND TO THE DELIVERY OF STILLBIRTHS



The results remain a cause for concern to note that such a high number of stillbirths are associated with a certain population group. From these results, one recommends more research to be done in the area of the above population groups in regard to practices and knowledge in preventing stillbirths. The result can produce shared knowledge which can be used to improve the care for the black population group in regard to prevention of stillbirths. Furthermore, the study should entail an exploration of resource availability for maternal health care services for the different population groups.

Similar findings on population disparities in relation to delivery of stillbirths was found in a study done in the United States of America, showing that the Black population group have a high stillbirth rate of 10.5 per 1000 births due to marginalisation compared to their white counterparts with 4.8 per 1000 births (Williams, Wallace, Nobles and Mendola, 2018:1). The authors stated in their study that in the United States of America, there are structural racial disparities with geographic separations, leading to poor access to resources and a stressful environment for the black group population. (MacDorman and Gregory, 2015:8) mentioned that statistics for stillbirths are twice as high in the black Hispanic population compared to their white counterparts. These results prompt research to seek knowledge to understand if it is resource constraint, clinical skills of health care workers or knowledge of mother

in regard to maternal and foetal care that lead to such a high number of 99 per cent stillbirths to the population of black women. A case-control study will be recommended.

4.3.1.7 Identity

All pregnant mothers reporting in a health facility for booking are expected to register using their national document to facilitate the legal requirement of patient registration. The Department of Home Affairs requires that all babies be registered at point of delivery whether it is alive or dead. All stillborn babies above 1 kilogram are registered for burial hence it is required that all mothers have their identity documents. A total of 56 per cent (130) of the women were South Africans according to recorded identity status compared to 4 per cent (9) non-South Africans. Forty per cent (92) of women's records did not state the identity as required by the standard document of the Maternity Case record (MPDoH: 5). Figure 4.7 shows the number of mothers who had their identity for patient registration.

FIGURE 4.7: IDENTITY REPRESENTING NATIONALITY

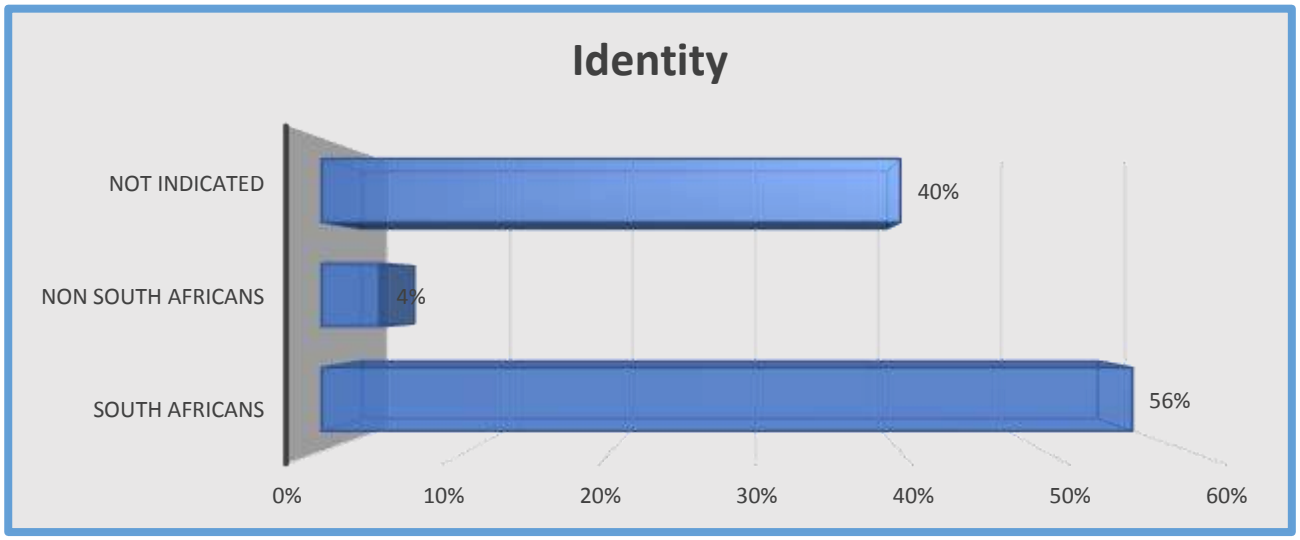


Figure 4.7 presents a challenge in terms of compliance to recordkeeping or compliance to patient administration requirements and documentation of stillbirths as required by the Births and deaths registration function of Home Affairs. Landau, Ramathan Keo-Singh (2005:17) mention that there are thousands of people living in South Africa that are undocumented. The tertiary hospital is located along the Maputo corridor N4 High way and being in the heart of the Mpumalanga coal mines predisposes it to a lot of migration effects which could possibly contribute to undocumented

possibilities of some of the women who have delivered the stillbirths. Campaigns and roadshows on the requirements of identity documentation for birth confirmation and death registrations can be done to improve the outcome.

4.3.1.8 Lifestyle issues

Lifestyle issues of a pregnant woman form a critical role in the pregnancy outcomes and quality of the baby to be born. In many studies, it has been found to result in adverse birth outcomes. The lifestyle factors investigated in this study were the use of alcohol, drugs and smoking. The results found in this study revealed 80 per cent (191) mothers were non-user of either tobacco, alcohol or drugs compared to 5 per cent (12) who were a user but quit alcohol. In 15 per cent (35) of the women's files, lifestyle pattern was not recorded. In a study done in the United States of America, William et al. (2018:210) found that among white women who had prenatal alcohol use there had been an increased stillbirth rate of 9.2 per 1000 births compared to the black woman. Similarly, Poels (2017: 35) did a study in the Netherlands which found that smoking prior to pregnancy was associated with the occurrence of adverse pregnancy outcomes. In comparison to other study findings, the results of the current study indicate that the lifestyle issues are not anything to worry about in the area of Emalahleni as the majority of mothers are not using drugs, alcohol and tobacco.

4.3.2 SECTION B: Antenatal factors

This section unpacks analysis and findings of antenatal care factors ranging from booking, trimester when booking was done, gestational age at booking, name of referring facility, number of antenatal care visits, health education given on pregnancy risk, diet and breastfeeding, medical and obstetric history, Blood tests done, vitals supplements given and use of a foetal kick count chart. Antenatal care has been mentioned by several researchers as a strong determinant of the pregnancy outcome. Abuka et al., (2016:2) calls antenatal care a pillar to prevent adverse pregnancy outcomes. In 2010, South Africa reengineered its Primary Health care model, aiming to support a preventative and promotive health care system to improve quality of care across the country (Austin-Evelyn, Rabkin, Macheka, Mutiti, Mwansa-Kambafwile, Dlamini et al., 2017:13). This was to strengthen mother and Child Care programmes which include the antenatal care. Starting with making the services for pregnant mothers free and keeping in touch with them throughout pregnancy with Mom Connect are at least just a few mentioned strategies in the quest of improving antenatal care. Furthermore, the antenatal care package has been improved from basic antenatal care of 4 visits to a new WHO ANC model of 8 visits called BANC PLUS to improve quality care. The new Banc Plus model has been tested in the Eastern Cape in South Africa and has proven that it reduces avoidable perinatal and

maternal mortalities(Hofmeyr and Mentrop, 2015a:903). These findings of the current study will now be discussed according to the antenatal care factors investigated.

4.3.2.1 Booking status

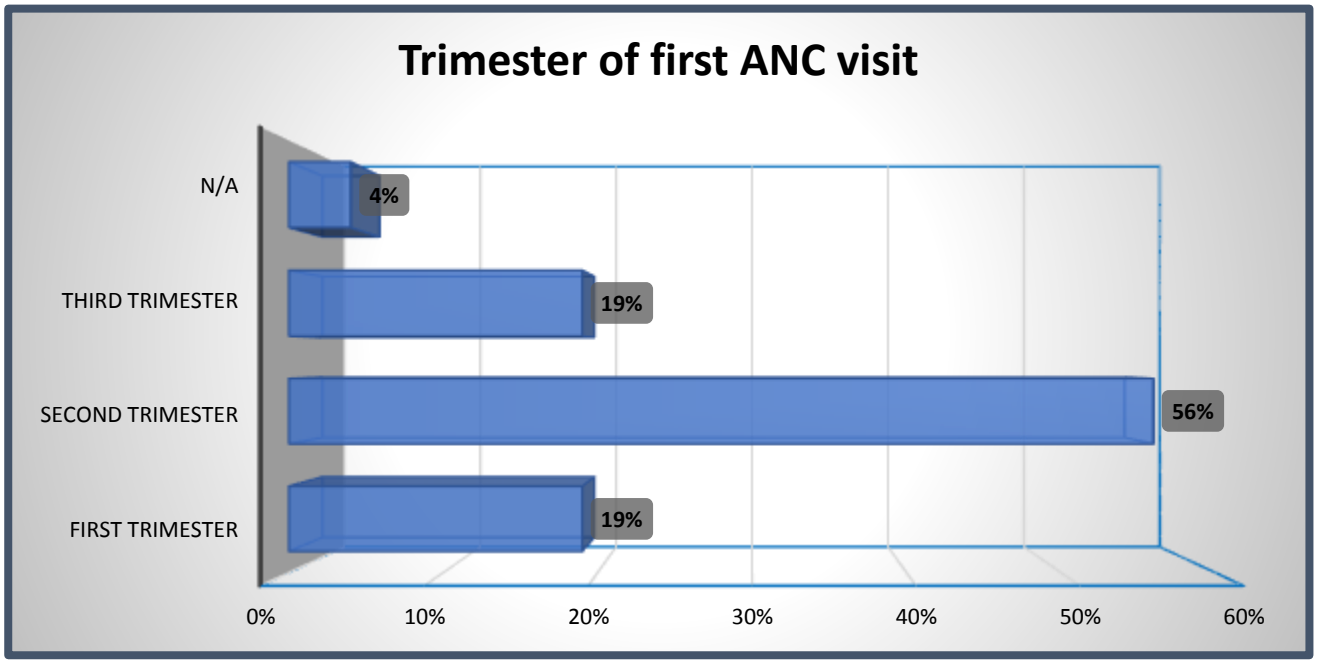
In South Africa, services for pregnant women are free, aimed at improving perinatal outcomes. Free maternal and child health services were part of the strategy to reduce both maternal and perinatal deaths. Findings in this current study are in keeping with the national objective where the majority of the women 82 per cent (189) were booked compared to the 18 per cent (42) not booked for antenatal care. These results are congruent to the statement in the Saving Mothers book of 2014 that most of the women in South Africa book for their antenatal care, however, the challenge becomes the timing of that booking.

When a woman discovers that she is pregnant, one of the most important things is to present herself to a health facility for confirmation of pregnancy and booking. Kaswa, Rupesinghe and Longo-Mbenza, (2018b:1) mentioned that the universal recommendation for booking is in the first trimester. The first trimester is an important period in antenatal care which Ebonwu, Mumbauer, Uys, Wainberg and Medina-Marino, (2018:13) confirm that complete assessment and gestational assessment ought to be made. The researchers' further state that the advantage of booking is a gateway for integrated management of several conditions that can adversely affect the unborn child. Furthermore, Ndidi et al., (2010:47) did a study in the Niger Delta of Nigeria which confirms that early commencement of antenatal care has potential positive maternal and foetal outcomes. Ebonwu, Mumbauer, Uys, Weinberg and Marino (2018:16) agreed that a delay in presenting for early antenatal care is a delayed opportunity to prevent adverse birth outcomes. This means that the woman misses opportunities for general examinations such as observations of blood pressure, urine test, a blood test for HIV and syphilis and physical screening of health risks that can detrimental to the life of an unborn child to be done (Singh and Biswas, 2017:1287). In the current study, the 18 per cent of women who reported unbooked were a concern as this was the category that could have missed opportunities in screening to prevent the stillbirths. Robust health promotion through forums of media, community imbizos and churches should be used to make the community aware that babies are dying if women do not attend antenatal care.

4.3.2.2 Trimester of first antenatal booking

The timing of booking for a pregnant woman is very crucial in regard to the different investigations and test that have to be done to rule out pregnancy risk on time. Early booking allows for early detection of pregnancy risks and early referral (Abuka et al., 2016:1). It came out of the current study that 19 per cent of the women booked during the first trimester, with the majority of 56 per cent booked within the second trimester, and 20 per cent booking within the last trimester as illustrated by Figure 4.8.

FIGURE 4.8: BOOKING STATUS ACCORDING TO THE TRIMESTER



Similar findings were presented by Birhanu et al. (2014:1) who found that in Ethiopia, 35 per cent of the women booked in the first trimester and 64 per cent collectively booked in the second and third trimester. Further similarities were seen in a study done by Beauclair et al. (2014:4) which revealed that 7.3% of pregnant women booked in the first trimester, 60.1% booked in the second trimester while 32.6% booked in the third trimester. The timing for early booking varies in different countries. In South Africa, early booking is regarded as any time before 20 weeks of gestation (Kaswa et al., 2018:1). However, in the Strategic Plan for Maternal, Newborn Child and Women Health and Nutrition (2016:9) it is stated that basic antenatal care should commence within the first trimester (12 weeks' gestational age). Meanwhile, in Malawi, it is regarded as 16 weeks' gestation age (Taylor & Roberts, 2017:18). In this study, it was revealed (Dziuban, Moskal and Hartman, 2005) that the

timing of booking early in the first trimester is still a challenge for women around Emalahleni, which makes it difficult for women to be screened early for pregnancy risks and complications to prevent stillbirths. However, the Fisher's exact test score of p=0.327 revealed that there was no association found between timing of booking for the different trimester and stillbirths. Future studies can be conducted to find out why women book late for their antenatal care in the Emalahleni community especially those who have the stillbirth for the second time.

4.3.2.3 Booking place

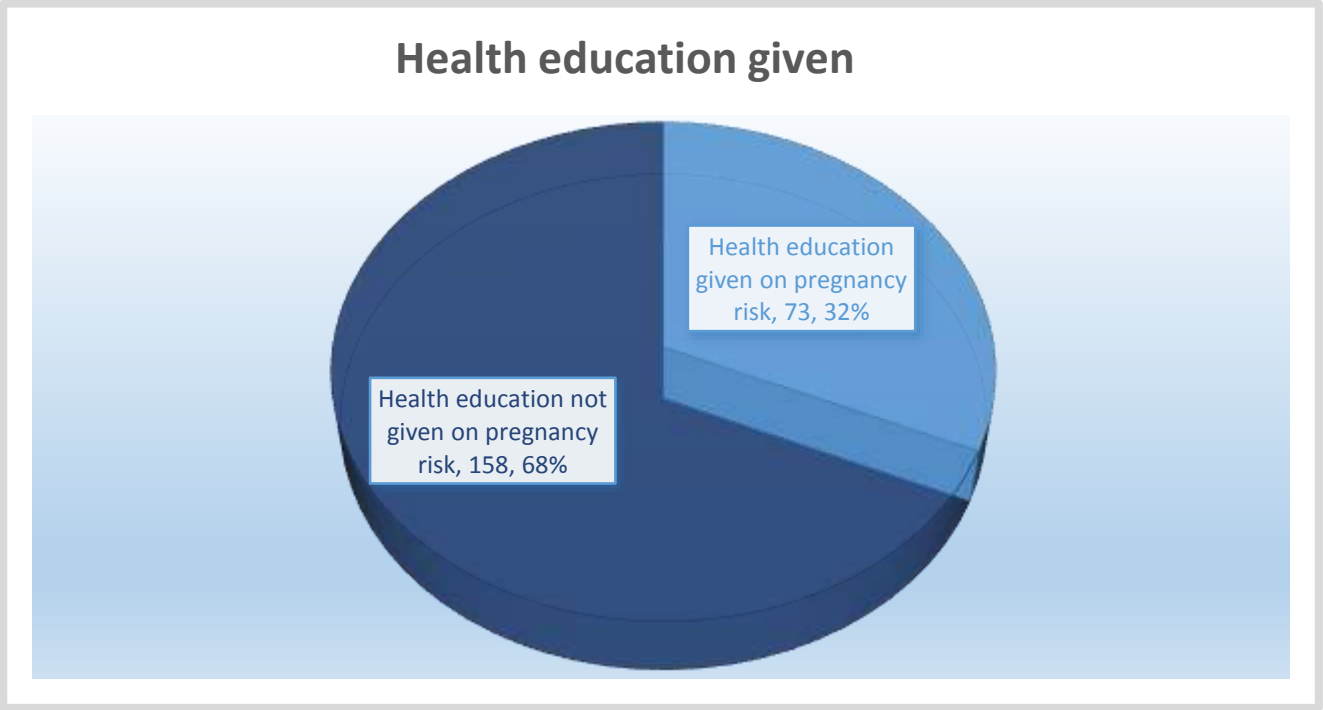
Of the 231 women, 85 per cent (197) booked at the clinics compared to the 6 per cent (16) booked at the hospital and only 1 per cent booked by the General Practitioners with the remaining 8 per cent not booked anywhere. It will be of much interest to find more information on which ages were amongst those not booked and reasons thereof in future studies. These results are in line with the primary healthcare package which encourages all the communities to start at their clinics before going to the hospital unless they are referred or are emergencies because the tertiary hospital serves as a referral according to Government Gazette (2012:5). Maternity care guidelines by NDoH (2016:30) state that all women who are cared for by private practitioners must carry their letters or cards summarising care given to that effect. This assist in terms of the continuation of care to prevent adverse pregnancies of stillbirths. In a study done in Ghana by Iyanda, Oppong and Omotoso (2018:36), it was found that women, empowerment in terms of wealth and education influence choice of use of a private practitioner or public facility. This means that it depends on affordability however it can be agreed that women at Emalahleni booked with the public facility because the majority of them were not employed. From the results of this study, it is notable that most of the women book within the public care facility which shares a universal document of the maternal case record. Continuity of care from the primary level of care where the booking is done and finally at a tertiary hospital where delivery takes place is not compromised.

4.3.2.4 Health education

Sir Francis Bacon's famous proclamation that says "knowledge is power" has been the foundation of the academy for hundreds of years (Dziuban, Moskal & Hartman, 2005:11). According to Sir Francis, this simply meant that the ability to use knowledge effectively gives one power to make appropriate effective decisions. Even amongst pregnant women education and knowledge forms a critical foundation for decision making by the mother in response to her health needs. It was revealed in this study that the majority of women 61 per cent (142) did not have clear documentation or records showing that they did receive health education on danger signs of

pregnancy or pregnancy risk. Only 32 per cent (73) indicated that they were given health education on pregnancy risks with evidence thereof documented in the maternity case record. On statistical testing with Fisher's exact test, a p value=0.072 revealed that there was a marginal association on lack of health education on pregnancy risk with stillbirths. Some 6 per cent (18) of the women did not receive health education as they only arrived for the first time in a health facility to deliver and therefore did not attend any antenatal visits where they could have been given health education. Figure 7.9 demonstrates the implementation of health education to pregnant mothers with regard to pregnancy risk factors.

FIGURE 4.9: HEALTH EDUCATION IMPLEMENTATION



The lack of implementation of health education was also revealed in this study on education about diet where the majority of the records showed that 73 per cent (168) of the women did not receive education compared to 21 per cent (48) that received health education on diet with the remaining 6 per cent (15) where records were not indicating. Of importance to note on health education about diet is that each individual is taught based on the findings of other examinations like weight and Mid Upper Arm Circumference (MUAC). This would mean that health education on diet would only be presented to a patient if the weight and/or MUAC were found to be unsatisfactory. Therefore, these results on health education on diet should not be treated in isolation or independent of other variables such as weight and MUAC meaning that the lower percentages on health education might not be

poor implementation but be the fact that according to the women's health status weight and MUAC results, it was not necessary to give on health education on diet.

The current study found that health education about breastfeeding was given to the majority of the women with 74 per cent (170) having received health education compared with 20 per cent (46) who did not receive health education on breastfeeding and 6 per cent falling into the category of being unbooked. Most of the women 63 per cent (146) were health educated about the importance of clinic visits, in some clinic, it was even written in the patient's local language. With the date of follow up visit clearly stated for continuity of care.

One of the most important aspects of the training of all categories of nursing is giving of health education to individuals, families and the community. Therefore, with these findings of poor implementation of health education, it poses a cause for concern for pregnant mothers, especially with the resultant outcomes of stillbirths. Recommendations emphasise the strict implementation of health education if the stillbirth rate is to be reduced so that pregnant mothers are fully aware of pregnancy risk and are able to take responsibility to their health needs.

Jibril, Saleh, Badaki, Anyebe, Umar and Kamal (2018:155), in their conclusion of a study in Nigeria, indicates that health education intervention programme in pregnancy has a significant impact on both knowledge and accessing of antenatal care services by pregnant women.

According to Al-Ateeq and Al-Rusaiess (2015:240), heath education is an important component of prenatal care particularly for those who are pregnant for the first time. Amenu, Mulaw, Seyoum and Bayu (2014:2) mentioned that women's knowledge about danger signs of obstetric complication is profoundly important to enhance utilisation of skilled care during pregnancy. In this case, it can be assumed that some had stillbirths because they did not know about pregnancy risk factors as it has been attributed by many studies including a study conducted by (Räisänen, Hogue, Laine, Kramer, Gissler and Heinonen, 2018:73) from Finland that indicate that low education has been associated with stillbirths. However, there was no statistical significance in the proportion of health education not given and the delivery outcome of stillbirths demonstrated through a Fisher's exact and 1 –sided Fisher's exact test.

4.3.2.5 Previous medical History

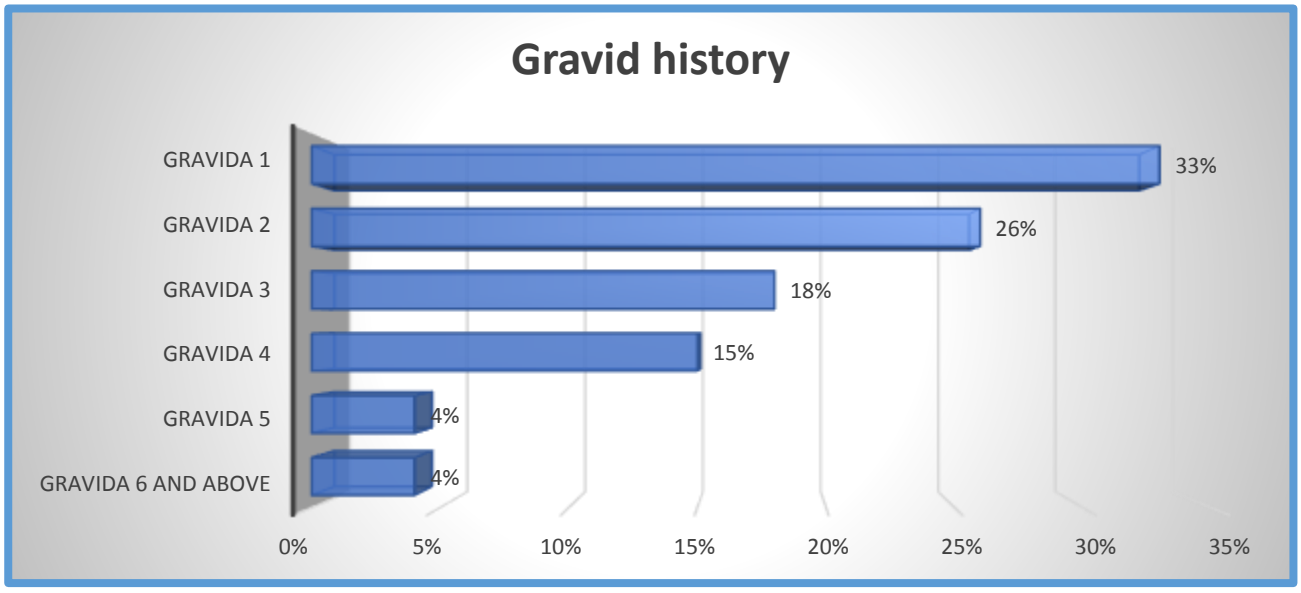
Medical conditions are a health risk to the unborn baby hence women are screened of such conditions. Hypertension, diabetes, cardiac, tuberculosis and Epilepsy forms part of conditions that the woman is screened for during pregnancy. In this study, the majority of women who had stillbirth from a hospital in Mpumalanga did not have any chronic disease where 69 per cent (159) were healthy without any chronic disease while only 17 per cent (39) women had some of the chronic conditions namely diabetic, hypertension and cardiac. Of particular importance was that 9 per cent (20) of the women who delivered stillbirths were known hypertensive. An effect of hypertension is also possibly shown on the number of the stillbirths resulting from placenta abruption which needs a further test on the association. Lavin and Pattison (2017:143) agree with these study findings as hypertension clocked 12 per cent of the stillbirths in a study for Mpumalanga, Limpopo and Western Cape. The authors further emphasised that hypertension remains ranked as the number one cause for concern on both the maternal and perinatal mortality. Therefore, vigilance in monitoring mothers with hypertension is highly recommended if stillbirths are to be reduced. Nakanishi, Awoki, Nakashima and Seki (2017:39) in Japan mentions that Hypertensive disorders in pregnancy are a potential serious complication to perinatal deaths. Ahsan et al. (2017:43) also confirmed that 20 per cent of women with stillbirths had complicated with hypertension. Cardiac disease rated the least 0.4% (1) with only one woman who delivered a stillbirth is a cardiac patient and 1 per cent (2) having a history of TB.

The findings of the current study is similar to the study done by Kujala et al. (2017:63) in Eastern Uganda where it was found that 50 per cent of their stillbirths were not associated or linked to any maternal conditions. Therefore, it can be summarised that most of the causes of stillbirths are unknown since the majority of the mothers are healthy. With the results of this study, it can be concluded that medical conditions are well managed in pregnancy through high-risk surveillance and early referral from the primary health care facilities through follow up of the BANC Plus guidelines and Principles of Good Care Guidelines (2016). The updated BANC PLUS South Africa guidelines provide direction for screening maternal health conditions with algorithms provided for when to refer for further management (2016: C1-C16).

4.3.2.6 Number of pregnancy. (Gravid history)

Women pregnant for the first time need to be supported with a lot of information to assist them to cope with the demands of pregnancy and ensure positive pregnancy outcomes. Nulliparous women tend to have no information about changes that she will experience as a result of pregnancy. In terms of parity history, the majority of the women 32 per cent (75) in this study fell within a group of the women whose pregnancy was for the first time. These results reflect a painful situation where the mother experiences the trauma of losing her baby being young and being the first pregnancy. Preciado and Hernandez (2017:33) did a study that revealed that young women falling pregnant for the first time suffer a lot of stress and anxiety due worry about pregnancy complications, the process of delivery and parenthood which if not educated can complicate to postnatal depression. Twenty-six per cent (60) of the mothers who had stillbirth were those pregnant for the second time while the ones with 3rd pregnancy were 18 per cent (41) and 4th pregnancy being 15 per cent (34) and finally those pregnant for the 5th time making 4 per cent (9) with above 5 making 4 per cent (8). There were similar findings to a study in Ethiopia where Tilahum and Assefa (2017:2) found that the majority of women with stillbirths were primigravidas as compared to multiparas. Figure 4.10 depicts the prevalence of stillbirths per group based on a number of pregnancies (gravid).

FIGURE 4.10: STILLBIRTHS PER GRAVID CATEGORY



The general assumption will be that this was a vulnerable group in terms of knowledge and experience of pregnancy. According to Al-Ateek and Al-Rusaiess (2015:240), health education is an important component particularly for women pregnant for the first time. This result of the majority of

women being pregnant for the first time was further tested for the association on health education and the outcome of the stillbirths through Fishers exact test which revealed no association. Contrasting results have been found in Northwest Ethiopia where Amenu et al. (2015:8) found a significant association of knowledge on Multiparous than primiparous which was attributed to multiparous being aware of health problems related to pregnancy due to previous experience. This means that health education should be strongly enforced to those mothers who are pregnant for the first time.

4.3.2.7 Previous Obstetric risk factors

In this study, results showed that 11 per cent (26) already had a previous intrauterine death which meant a double tragedy for the woman to lose this pregnancy in addition to another stillbirth. Nine per cent (34) of the woman had a previous miscarriage before this stillbirth, with 3 per cent (7) having suffered a neonatal death. The results also confirmed through a statistical test using Fisher's exact a significant association of previous intrauterine death with a delivery outcome of a stillbirth.

```
------------------------------------------------------------

   Over | Proportion Std. Err.  [95 per cent Conf. Interval]

-------------+----------------------------------------------

No           |

         No |0.669 .037682    .59075 .7385347

        Yes |0 .462 .0997037   .27974 .6541719

-------------+----------------------------------------------

Yes     |

      No | .3312102  .037682   .2614653   .40925

     Yes | .5384615 .0997037   .3458281 .7202556

------------------------------------------------------------


. test [No] No=[No] Yes
```

(1) [No]No - [No]Yes = 0

F (1, 182) = 3.78

Prob > F = 0.0534

Results revealed a very low number of history with previous bleeding in pregnancy (1% - 3). According to BANC guidelines 2005 on Principles of Good care revised in 2016 (Pattinson, 2016:C3, C5, C9, C17:), every woman who present with a history of previous or current pregnancy complications must be referred to the next higher level of care so that she can be closely managed by specialist to prevent further pregnancy complications and loss of baby. Intensifying the monitoring of high-risk mothers is needed to prevent the tragedy of double pregnancy losses. In a study done in Pakistan, Ahsan, Ayub, Gul, Khan, Zafar (2017:41) it is mentioned that there are many medical and obstetric problems that put the life of the unborn baby and mother at risk, and with such, early aggressive intervention is needed to mitigate risks. Therefore, further research can be done to evaluate effectiveness in attendance of high-risk clinic for those with previous bad obstetric history to prevent repeated pregnancy loss.

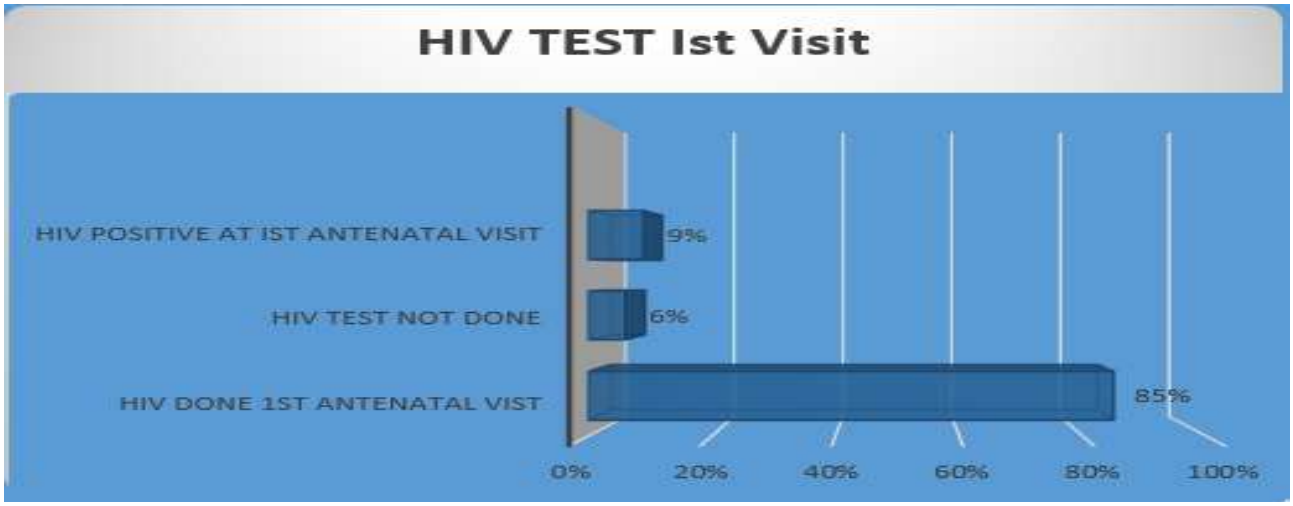
4.3.2.8 Vital data monitoring

The majority of the women 77 per cent (176) and 74 per cent (172) had their vital signs, blood pressure and urinalysis checked on every visit respectively. This is a critical measure for the health care providers to be able to pick up pregnancy risk, especially hypertension that is one of the most killer diseases for both babies' and mothers in pregnancy. In terms of measurement for the women's nutritional status, the majority 42 per cent (96) of the women who had stillbirth MUAC fell within the normal range of 24 to 32cm according to a Maternity care guideline (2016:32). Out of the total 231 women, only 7 per cent (16) measured less than 23cm and a significant number of 11 per cent (26) measuring more than 33cm. The rest 40 per cent of the woman's records did not have a measurement of MUAC indicated. There is a tendency of those with an above normal MUAC measurement to be associated with a chronic disease like diabetes however amongst those who delivered stillbirths only three mothers had diabetes. Diabetes has been one of the conditions attributed to causing intrauterine foetal demise (Association, 2016:595). In this study, there was only 1 per cent of the total women with diabetes who delivered stillbirths and there was no statistical significance of association with the delivery of stillbirths.

4.3.2.9 Blood tests

HIV management remains a key item in the health global strategy and is one health indicator that has been under a series of research. The whole aim has been to reduce new HIV infections and eliminate mother to child transmission. All pregnant women presenting to healthcare facilities are offered the opportunity to be tested and given treatment if positive regardless of CD4 count. This strategy is to assist in suppressing the viral load and prevent mother to child transmission as much as possible. The majority of the women 85 per cent (197) had HIV test done on their first antenatal visit.6 per cent (13) were not tested for unknown reason however another 9per cent (21) was not tested because they were already HIV positive at admission (148) tested HIV negative contrast to 30 per cent (70) who tested HIV positive. Follow-up test at 12 weeks done to 33 per cent (76) of the 65 per cent (148) who were initially HIV negative to ensure they had not sero converted. These results are in line with findings of Gumede, Black, Naidoo and Chersich (2017:32), in a study done in Johannesburg, where 87 per cent of the woman had a known HIV status. In line with the national consolidated guideline of HIV, Elimination of Mother to Child Transmission (EMTCT) and management of HIV in Children, adolescents and adults (2014:68), it is of critical importance to ensure that all pregnant HIV diagnosed mothers are effectively managed to promote their health and prevent opportunistic infections which could predispose them to stillbirths. Figure 4.11 illustrates the HIV trend amongst the women that delivered stillbirths in the tertiary hospital.

FIGURE 4.11: HIV TESTING TREND AMONGST THE MOTHERS WHO DELIVERED THE STILLBIRTHS



Ebonwu et al. (2018:2) reinforce the point that maximum benefit of anti-retroviral treatment can be achieved through early initiation of antenatal care. It was encouraging to find that all the women who tested positive were initiated on Highly Active Antiretroviral therapy (HAART). More studies can be done to examine the CD4 count and the viral load of the women on HAART according to National Guideline on HIV (EMTCT) And Management of HIV in Children, adolescent and adults (2014:60) so as to rule out non adherence to treatment which can lead to complications of non-pregnancy related infection that can possible complicate to delivery of the stillbirths.

4.3.2.10 Use of a foetal kick Count Chart

One of the recommendations of the Saving Babies Triennial report (2012 to 2016:11) is to improve pregnant mothers, awareness of foetal movements using a foetal kick count chart. This tool forms a major role in early identification of foetal complications in utero after 28 weeks of gestation. In this study, the majority of mothers 73 per cent did not have a foetal kick chart in their files. Only 27 per cent had a fetal kick count chart it in their files, of which only 9 per cent used the chart to record their baby movements. This could be as a result of lack of knowledge in the use of foetal kick chart or lack of monitoring on implementing and understanding the use of the chart. The benefits of foetal kick count on preventing stillbirths remain debatable as indicated in the WHO recommendations on antenatal care (2016:53). There has been low certainty evidence in weighted mean difference in stillbirth rates and foetal kick count implementation, especially in high income countries with low stillbirths however further studies, are needed in the areas with increased stillbirths (WHO, 2016:53).

4.3.3 SECTION C: Intrapartum care

This section presents the variables of intrapartum care that were assessed on records of mothers that delivered stillbirths in the tertiary hospital. Intrapartum care is a critical stage for the pregnant woman and her family when labour becomes a signal to nearing of a new additional family member. This is the time when a woman is fully dependent on the support of healthcare professionals for a positive labour experience and outcome. Continuous monitoring is mandatory at his stage to ensure both maternal and foetal condition for a positive pregnancy outcome. The factors that were assessed under intrapartum care status of the baby at admission are: Monitoring done on the progress of labour using partogram, Mode of delivery, Delivery complication, Health care category delivering, The outcome of delivery, Sex of stillbirth, Weight category of stillbirth, Counseling and Future birth plan.

4.3.3.1 Status of the baby on admission

According to maternity care guideline, every pregnant woman is supposed to receive an initial assessment on admission. These assessments will form the baseline for planning care of the mother based on findings thereof. When the mothers received their initial assessment at admission it was found that out of the 231 mothers, the majority (80% - 184) were admitted with babies already dead in utero, with only 15 per cent (34) who came with babies alive at admission. The majority of the women (89% - 206) received a sonar examination at admission, which was a tool used to confirm the status of the baby, whether alive or dead, together with the cardiotocography measurement. Similar findings were reported in a study done in Indonesia by (Anggondowati, El-Mohandes, Qomariyah, Kiely, Ryon, Gipson et al., 2017:3) where 85 per cent of their stillbirths had no foetal heart rate upon arrival. Similarly, in Rwanda, Musafili, Person, Barbirwa, Pafs, Mulindwa and Essen (2017:9) found that most of the perinatal deaths were macerated due to delay in seeking medical attention and non-recognition of danger signs of pregnancy. These results are a clear indication of antenatal challenge that needs to be addressed if stillbirth rates have to be reduced because mothers arrive in the hospital when it is very little for the hospital to do. These results can further be compared to the delivery outcome where macerated babies form a larger component of stillbirths. This is one of the key reason why the stillbirth rate of the hospital is higher than the targets because deliveries are made in the hospital while factors contributing to the delivery of stillbirths are at antenatal care level. The recommendation would be a formulation of a feedback mechanism for the primary health care team to know these delivery outcomes so that improvements can be done at Primary healthcare level.

4.3.3.2 Monitoring done on progress of labour until delivery using a partogram

Findings in this study revealed that of the 231 women, 65 per cent were not monitored with a partogram during labour. This was noted for those who came with babies already dead on arrival. Only 23 per cent (54) were monitored with a partogram during labour. Eleven per cent (26) received a c/section and were not monitored for the progress of labour. The non-monitoring of mothers in labour on a partogram poses a risk of maternal complications since uterine rupture can happen undetected when contractions are not monitored. The WHO recommends the use of a partogram (Levin, Pett & Lavender, 2017:1) to both Lower Income and Higher Income countries as a tool to monitor the progress of labour. Monitoring of labour using a partogram enables health care providers to identify complications early, during intrapartum care and be able to prevent adverse pregnancy outcomes. This tool covers the foetal and maternal condition Neal, Lowe, Caughey, Bennette, Tilden & Caslon et al., (2018:2). According to the standard use of a partogram, every woman in the active phase of labour has to be monitored. The monitoring enables early detection and timely intervention

on obstetric complications Yisma, Dessalegn, Astatkle & Fesseha, (2013:6). However, in Ethiopia it was found that there was only a 32 per cent compliance to foetal heart rate monitoring, 30.7% to cervical dilatation monitoring and 20 per cent to monitoring of contractions. However, it has been noted by (Bedwell, Levin, Pett and Lavender, 2017:1) that despite a partogram having been used for over 40 years, it has not reached its potential benefit and evidence of is effectiveness remain inconclusive. However, even with the similarities on above study findings of poor implementation of partogram, its potential benefit can still be reached through continuous in-service training of staff and awareness of its benefit to delivery outcomes.Continuous record audit is recommended as a quality improvement to effective utilisation of a partogram.

4.3.3.3 Mode of delivery

A controversy around which mode of delivery is better to reduce complications has always not been easy to answer as things could go wrong on either of the methods depending on each individual case and circumstances. The researcher analyzed results to find out if the method of delivery has an impact on the delivery of stillbirths.The majority of the women who had stillbirths had normal vaginal delivery with 83 per cent (192) compared to only 15 per cent (34) who had caesarean section extraction. One per cent (3) of women had an assisted delivery with a vacuum, 1 per cent (3) had delayed the second stage and another 1 per cent (3) had cord prolapse. Using a statistical test of Fishers exact and Independent T-test, there was a significant association between a delivery complication and the delivery outcome of stillbirth. Prop Del_Complication, over (Del_Outcome) P>F=0.0343. A study conducted in Tanzania, Chuwa, Mwanamsangu, Brown, Msuya, Senkoro and Mnali et al. (2017:7) found that nonspontaneous delivery was protective against stillbirths. Contrasting results to those findings are in a study done in Ethiopia, Tihun and Assefa (2017:4) found that stillbirths were significantly associated with assisted deliveries (Cor = 0.4 95 per cent). Women who delivered through normal vaginal birth were 80 per cent less likely to deliver stillbirths compared to caesarean section. Therefore, mode of delivery remains debatable in its implications to stillbirths as shown by various results however delivery complication such as assisted deliveries and cord prolapse have been attributed to an association to stillbirths.

4.3.3.4 Health care category delivering

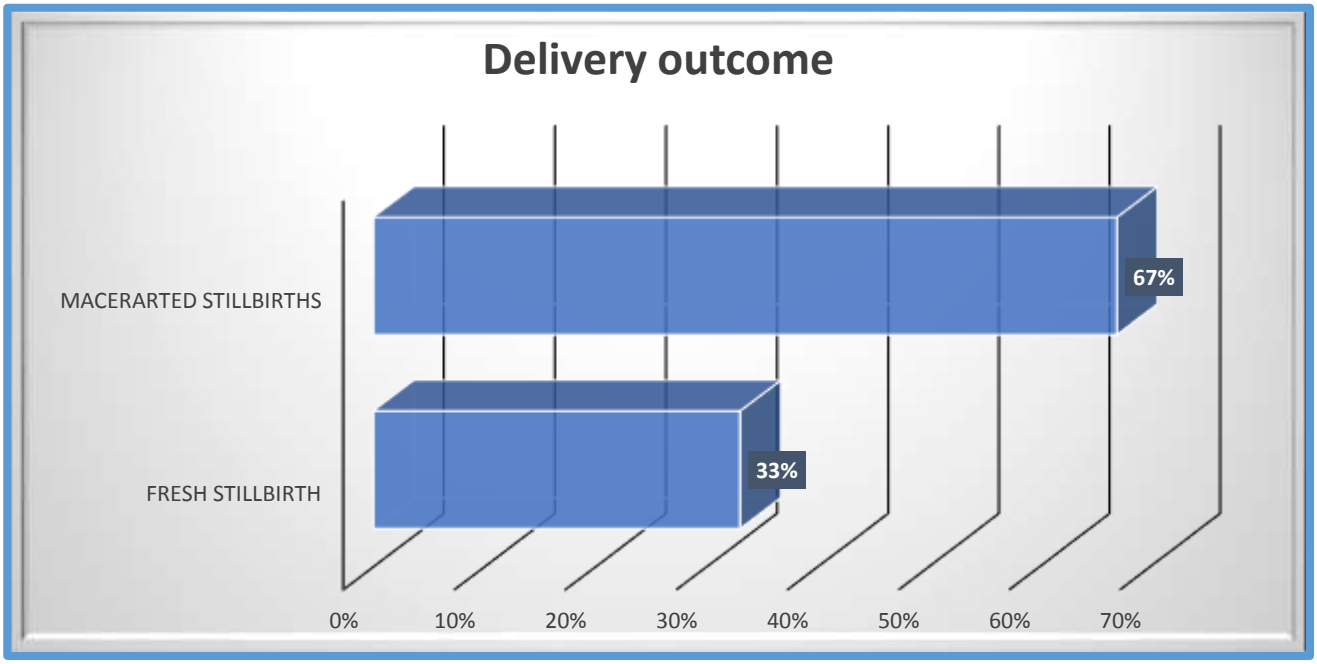
General midwives were found to be delivering the majority of women with 55 per cent (127), while 24 per cent (56) were delivered by advanced midwives and 21 per cent (48) delivered by the doctor. These results are a positive note of standard compliance with the WHO recommendations. Karacam, Kurnaz and Gunes (2018:16) indicated that every birth must be delivered in the presence of a trained

health worker. The author found that all the stillbirths were delivered by midwives and doctors. Therefore, the results of this study elicited the exclusion of any woman who could have delivered alone and ended up with a stillbirth since they were all conducted by health care professionals.

4.3.3.5 Outcome of Delivery

The delivery outcome of stillbirth is a traumatic experience to both the mother and the health care worker delivering. The rest of the pregnancy duration period where the mother had hopes and excitement of her baby becomes shattered when she receives a baby without signs of life. This becomes worse when the baby is born with maceration due to the time frame the baby has been dead in the mothers' uterus. The majority of the stillbirths delivered were macerated at 67 per cent (155), compared to 33 per cent (76) which were recent stillborns. In support of the findings of this study, Musafili et al. (2017:5) in their study in Rwanda found that 106 of total 250 perinatal deaths were macerated stillbirths compared to 63 fresh stillbirths. A similar situation has also been reported in Nigeria by Okochi Isah, Agida and Adewole (2018:761) where it was mentioned that the macerated stillbirths were slightly more than half the fresh stillbirths with 52.8% and 47.2% respectively. But a contrast has been found in the study in Zambia (2017:183) who found that there were more fresh stillborn babies (2103) compared to macerated (1774) born over a period of 5 years. Figure 4.13 shows the stillbirth category with the vast majority falling under the macerated group.

FIGURE 4.12: SHOWING DELIVERY OUTCOME WITH THE CLASSIFICATION OF STILLBIRTH

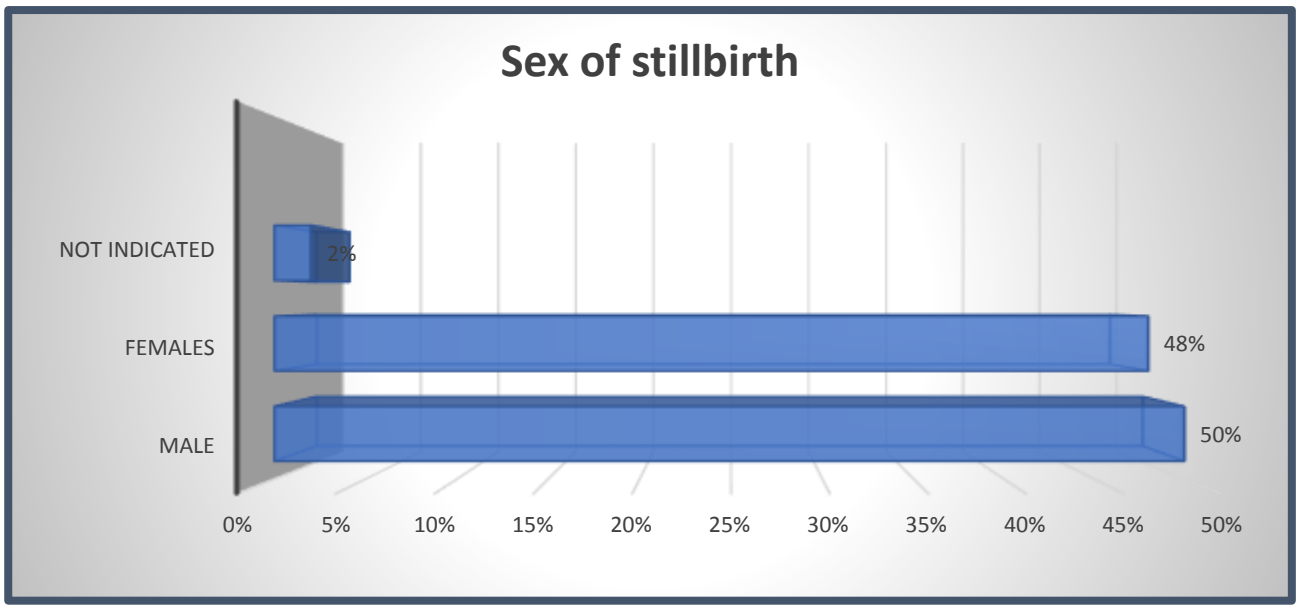


These results are in keeping with the findings of the Triennial report on Perinatal mortality in South Africa (Saving babies report, 2014-2016:21) wherein general 62.2% of stillbirths in South Africa are macerated according to the PPIP data. These results show clearly that most of the improvement plan to reduce stillbirth lie at the primary health care level as most of the babies are delivered already macerated with very little to nothing that the hospital can do.

4.3.3.6 Sex of stillbirth

In various studies, findings have been inclined to male sex being predominantly more affected by stillbirths than females. In this study, out of the 231 stillbirths, the majority were male (50% - 15) and female were 48 per cent (110) with 2 per cent (6) records not indicating the sex of the baby. Figure 4.14 is an illustration of the findings on stillbirth per sex group. Similar findings have been reported in India where 63 per cent of stillbirths were male compared to 47 per cent of females.

FIGURE 4.13: SEX OF THE STILLBORN BABIES



The above findings are similar to those found in a study done in Eastern Uganda by Kujala et al. (2017:67) where males' factor was found to be a high risk for stillbirths compared to female factor. It has been suggested by the same study that male foetus is vulnerable to stressors in utero. In Iran, 56 per cent of their stillbirths were male compared to 43 per cent of females Jahani et al., (2015:23).

This is quite a difficult area to make possible improvement plans for as the real cause of the male susceptibility is not yet known but general health education on pregnancy risk can be applied.

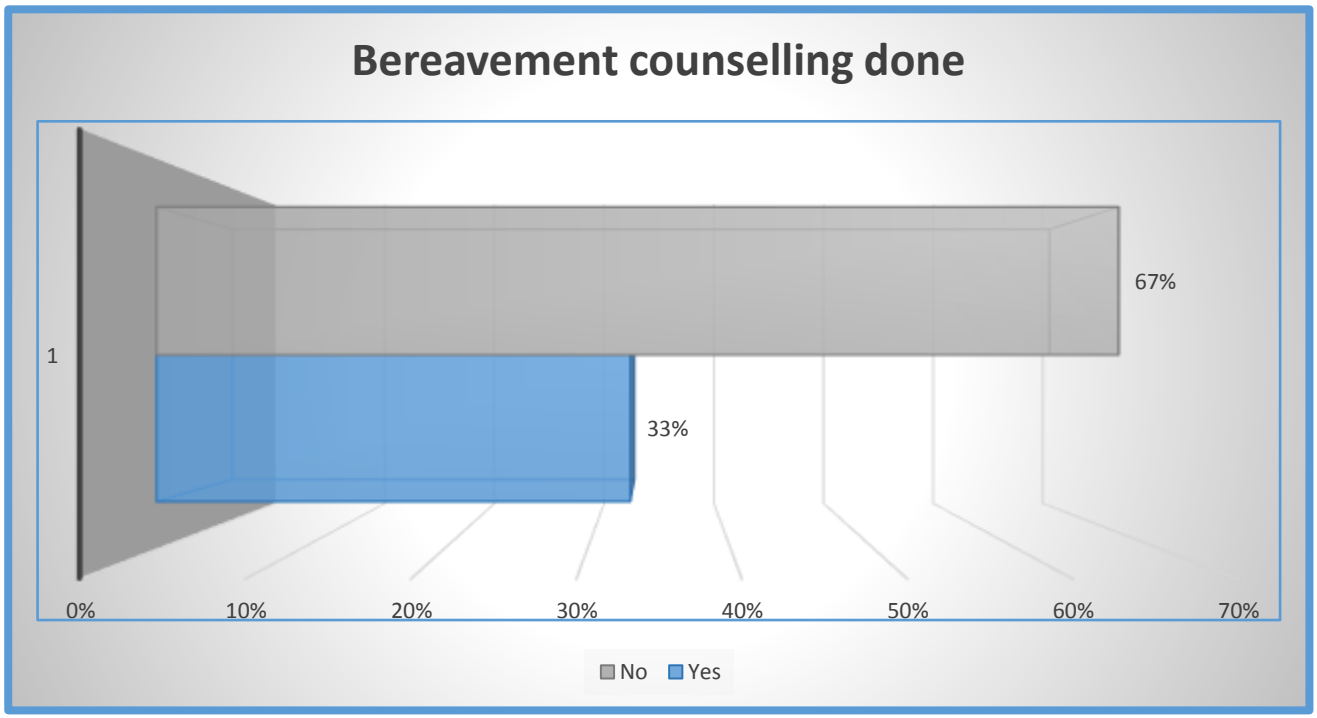
4.3.3.7 Weight categories of stillborn babies

The majority of the stillbirths were within the weight range of 1000g to 2499 (56% - 129), followed by weight range of 800 to 999g (21% - 49). It is important to note that all stillbirths less than 800g were not included in the study following exclusion criteria on non-viability according to the definition of stillbirth. The weight of 2500 to 2999g constituted 14 per cent of the stillbirth and 3000g to 3999 formed 7 per cent (15) there was 1 per cent (3) of above 4000g weight. The weight distribution of stillbirths is a concern as these fall within groups that can survive based on available technological and clinical support. Contrary to this study findings Anggodowati et al. (2017:3) found that the majority of stillbirths weighed less than 1500g however Jindal et al. (2018:1032) in India found that the majority, 65 per cent, of the stillbirths fell within normal birthweight compared to 31 per cent for below weight of 2500g. When comparing the mentioned studies, one would conclude that stillbirths occur across all different birth weights, however, those above normal weight are of concern because they have a higher chance of living than the premature babies. Therefore, there is a need for a vigorous plan to address the problem of stillbirth weighing normal weight. PPIP programme should be strengthened to be able to diagnose direct causes of these stillbirths and eliminate avoidable factors for the future, both in the antenatal and intrapartum care.

4.4 COUNSELLING

(Heazell, Siassakos, Blencowe, Burden, Bhutta, Cacciatore et al., 2016:40) state that women who suffer stillbirths suffer depression and some commit suicide. The same statement is supported by (Gold, Sen and Leon, 2018:41) who state that after perinatal death parents commonly struggle with questions about whether their own actions, behaviours, thoughts or omissions could have contributed to the death of their baby. Same authors further say this leads to an emotional state of guilt, self-blame, anger, depression, and a tremendous sense of worthlessness, therefore, bereavement counseling is key to reduce the psychosocial effects of stillbirths on mothers. In this study, only 33 per cent (76) of the women were offered counseling post-delivery of a stillborn. The majority of 67 per cent (155) of the women were not offered counseling (Petro, 2015:52) following the deaths of their babies. Figure 4.15 depicts a graph showing the implementation of counseling to mothers who had a stillbirth delivery in the hospital.

FIGURE 4.14: BEREAVEMENT COUNSELING



Further studies can be done to evaluate the impact of lack of counseling post-delivery of stillbirth in the hospital where the study was done. Gold, Sen, and Leon (2017:51) found that women in Michigan experienced guilt and blame about the loss of their babies. Mostly the blame was directed at health care workers even though not directly mentioned to them. Therefore, it becomes paramount that women are given bereavement counseling to clear feelings of guilt with facts of what exactly happened to their babies as well as to clear myths. This becomes an opportunity to demonstrate care and empathy. The hospital needs to look into policy implementation of bereavement counseling as well as monitoring since results reflect poor implementation. Further than local level, a maternity case record can also be adapted to accommodate bereavement counselling in cases of stillbirths so as to reduce secondary health care cost associated with implication of stillbirths on bereaved mothers as indicated by Ogwulu (2015:7) who identified that if depression following stillbirth is unrecognized and untreated it can lead to self-harm and in some cases suicide and result in greater secondary cost than when bereavement counseling is offered immediately.

4.5 FUTURE BIRTH PLAN DISCUSSED

According to Afulani (2015:6), there is a 5.4% chance for those with a past stillbirth delivery to deliver a stillbirth again than a 1.5% chance of a mother who never delivered stillbirth before to deliver a

stillbirth. This makes it imperative for health care workers to support women who have delivered a stillbirth with engagement on a plan for future pregnancy. It is not just a future delivery plan that is necessary but counseling should be given to the woman for both emotional and psychological support. Grief, sadness, and depression are just some of the experiences of families who go through the delivery of a stillborn baby (Kiguli, Munabi, Ssegujja, Nabaliisa, Kabonesa, Kiguli et al., 2016:6).

The future delivery plan also becomes a key interaction between the health care provider and the mother who lost her baby so as to prevent future pregnancy complications. In the current study majority of the women were not given a clear discharge plan in terms of a future pregnancy 84 per cent (193), compared to only 16 per cent who were told about a future pregnancy plan. The communication on a delivery plan was mostly omitted where hospital used an internal discharge summary tool than the standardized tool within the maternal case record. This highlights the need for health care workers to be more sensitive to the needs of women who have had stillbirths by strengthening communication and giving time to the mothers to engage about the future birth plan.

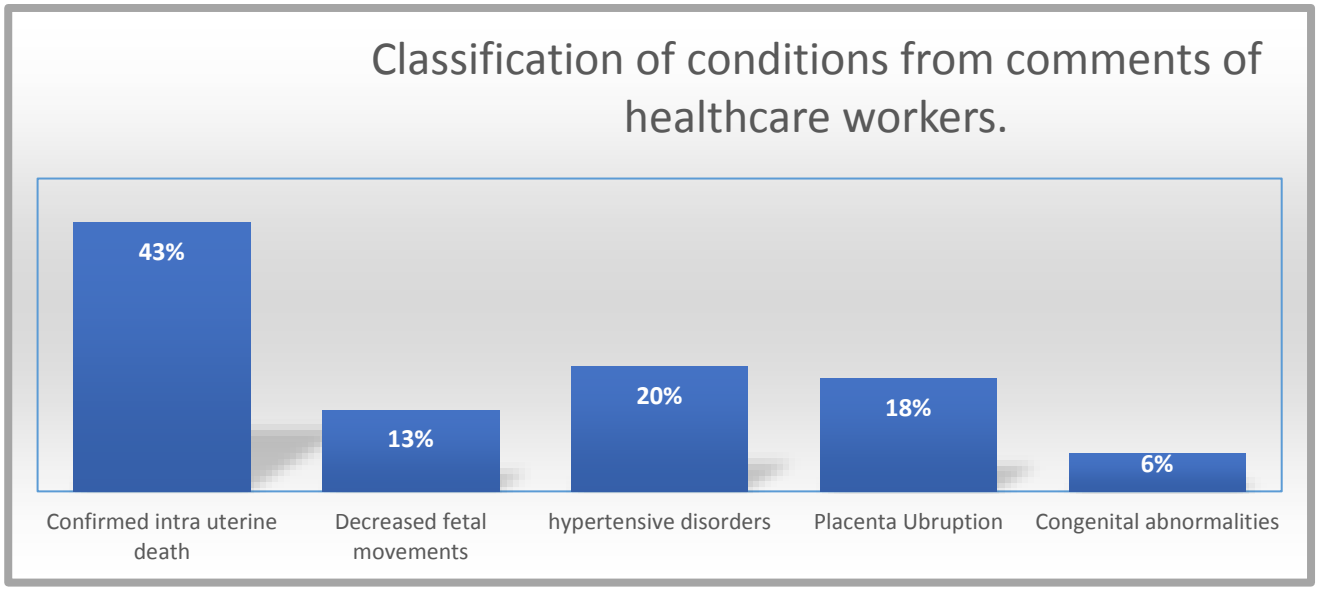
4.6 GENERAL COMMENTS CLASSIFICATION OF COMMON CONDITIONS

On reviewing general comments written by health practitioners on the records following delivery of stillbirths, these were the following groups of diagnosis that emerged.

These are listed and shown in Figure 4.16:

1. Confirmed intrauterine death (99)
2. Decreased foetal movements (28)
3. Hypertensive disorders (45)
4. Placenta Abruption (40)
5. Congenital abnormalities (13)

FIGURE 4.15: COMMON CONDITIONS FROM COMMENTS INDICATED BY STAFF IN STILLBIRTHS RECORDS



The majority of women (43%) reported to either having confirmed intrauterine deaths or reduced foetal movements in the hospital. These comments reflect that there is a need for further research at an antenatal level to find out why women delay seeking help at a higher level and only come when the baby is already dead in utero, which leaves the tertiary hospital with very minimal plan to assist the woman except just to deliver the stillbirth. The latter is traumatic to both the mothers as well as the midwives who are delivering these babies especially on the fact that the majority of them are macerated stillbirths. The picture of a macerated baby is very traumatizing. It is described by Lavin and Pattinson, (2018b:141) as a baby who's skin is discolored, blotchy, and friable to touch. The latter is described by Morake, Phiri and Van der Wath, (2016:971) where students experienced recollection of images of unwanted trauma of lifeless infant following delivery of stillbirths during their nursing care.

The following comments from healthcare workers were that most (20%) of the women had hypertensive disorders ranging from hypertension in pregnancy, pregnancy toxemia, eclampsia or at a stage with multiple organ damage of HELP Syndrome. It was noted in the records that some came in with eclampsia fitting resulting with decisions of terminating the pregnancy to save the mother's life. The number of women who had hypertensive disorders almost tally with those that presented with placenta abruption (18%) even though analysis of the cause of abruption placenta

was not done to find out if these had an association This area presents another future research area for the tertiary hospital.

Of importance to note in the comments where the report that 13 women who had stillbirths delivered babies with congenital abnormalities, which included multiple deformities, hydrocephalus, and hydrops fetalis, anencephaly with exomphalocele. The epitome of counseling applies most to the group of women who had not just had a delivery of stillbirth but of stillbirth with multiple congenital abnormalities. Ogwulu, Jackson, Heazell and Roberts, (2015:7) identified that if depression following stillbirth is unrecognized and untreated, it can lead to self-harm and in some cases suicide and result in much more secondary cost than when bereavement counseling is offered immediately.

Some of the stillbirths were noted to be a result of backyard terminations of pregnancy, specifically in 3 cases, which is a sign that there is a need for more education on services of safe termination of pregnancy to the public and pregnant women.

4.7 CONCLUSION

The study revealed challenges of the health education on the pregnancy risk factors during antenatal care, however this could not be proven as a strong factor contributing to the delivery of stillbirths because the statistical testing with a Fisher exact test showed no proportional association or significant difference between the education and delivery of stillbirth. Delay in booking was evidenced by most of the women booking in the second trimester and some even in the third trimester leading to limited time for screening for pregnancy risk. Use of a foetal kick count chart was found to be an omission in most of the women's files, the same could not be proved with the statistical testing as there was no association with the delivery of stillbirths on the fact of foetal kick count chart being available or used by the mother. A history of previous pregnancy complications like previous intrauterine emerged as a strong factor contributing to the delivery of stillbirths as also mentioned in the literature.

A significant relationship was found between the delivery complication and delivery of stillbirths, factors like cord prolapse, vacuum extraction and delayed the second stage of labour were amongst factors proved to be associated with the delivery of stillbirths through Fisher Exact test. Generally, a high number of stillborn babies were born already macerated, which gives a clear indication of poor

antenatal care because, the majority of the babies arrive in the tertiary hospital already dead with very little to, no help that can be offered from the tertiary hospital side. The main purpose of this chapter was to discuss the findings from the research and to seek a relationship of findings to literature from various settings that have been tested scientifically through other research. Findings were discussed and supported with a graphical illustration for easy understanding for the reader. Major gaps were found in antenatal care factors that were linked mostly to the poor implementation of health education. From the current Chapter 4, follows Chapter 5 which will further synthesize findings and present, scientifically benefit of the study to the body of knowledge and possible recommendations for further research and research concluding remarks.

CHAPTER 5
CONCLUDING RESEARCH FINDINGS, RECOMMENDATIONS, LIMITATIONS AND FINAL CONCLUSIONS

5.1 INTRODUCTION

In Chapter 4, an in-depth discussion and analysis of results were done guided by the three major sections of the data collecting tool. The sections covered the socio-demographic, antenatal and intrapartum factors. The data collection and methodology used was discussed and preceded Chapter 4. The source of data and how it was collected and aggregated to meaningful information was discussed in Chapter 3. In Chapter 5, a brief outline of the research questions are given so as to ensure summary findings are aligned with the main objectives of the study. This chapter will also present a summary of findings per section under the main objectives as outlined in the used data collecting tool. Recommendation of possible improvement plans will be highlighted so as to prevent delivery of stillbirths in the tertiary hospital. The author will highlight the limitations that were encountered during the process of the entire study. Lastly, a summary conclusion will be drawn showing how the objectives of the study were met and possible future areas of study will be identified.

5.2 RESEARCH QUESTION

QUESTIONS

- What are the antenatal factors contributing to the occurrence of stillbirths at a tertiary hospital in the Emalahleni subdistrict Mpumalanga province?
- What are the intrapartum factors contributing to the occurrence of stillbirths at a tertiary hospital in the Emalahleni subdistrict Mpumalanga province?

5.3 CONCLUDING RESEARCH FINDINGS ON FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS

5.3.1 Socio-demographic factors contributing to stillbirths in a tertiary hospital

Findings of this study revealed that the majority of women who had a stillbirth were found to be within the age group of 20 to 35 years, which is regarded to be a normal childbearing age. This childbearing group constituted 74 per cent leaving the below 20 years and above 35 years' group with a combined 26 per cent. This is the group that is usually regarded to be at risk in regard to pregnancy, however, findings of this study clearly indicate that pregnancy risks are not limited to the extreme ages, but they cut across all ages. Marital status showed results of majority women (78%) who had a stillbirth being unmarried. This raises a concern of serious need of social support to these women who have endured a pregnancy alone then later experience tragedy of losing her baby. Credible as it is that in South Africa laws have embraced social support to single women through a social grant to assist in supporting children, further support is needed when the single unemployed mother loses that child.

The results yielded a picture of majority patients utilizing the tertiary referral hospital being from the local subdistrict of Emalahleni with a higher percentage of 68 per cent compared to the combined 5 subdistrict referring to the hospital making 32 per cent of the total women who had stillbirths. When reviewing the regulation on functions of the hospital (Government Gazette, 2012:5), it was found that all the five subdistricts within Nkangala have district hospital except for the Emalahleni subdistrict where the tertiary hospital is. This might have an indirect effect of contribution to stillbirths where health care workers cannot manage very complicated patients while dealing with low-risk patients who are supposed to be delivered at community health centers and district hospitals. According to the Government Gazette (2012:5), the tertiary hospital shall receive referrals from regional hospitals however from this study the tertiary hospital has received the majority of its patients from the Community Health Centers (CHC). It was notable that all the community health centers are referring most of the women already with decreased foetal movement or diagnosed intrauterine death. This might have a long-term effect of demoralization of healthcare workers in a tertiary hospital where they constantly have to deal with the delivery of macerated babies.

The general unemployment rate experienced in the country is not an exception to pregnant mothers. It emerged in this study that the majority of women who had stillbirths were unemployed, with a rate of 68 per cent. It is quite a burden to the mothers coupled with the fact that the majority were also

single. The South African government has made advanced strides in ensuring social support through the social security reforms, however, it is still seen from the results that majority of women are unemployed. In a high unemployment rate, it is quite possible that some omen might tend to be abused in lieu of social support as the majority are unemployed and end up with stillbirths.

It is a known fact that South Africa host the majority of migrants from the Southern Africa region with an estimated population of undocumented aliens of plus or minus 5 million which now has mostly been referred to as “a swam of, or tidal wave of foreigners flattening borders of South Africa” (Crush and Williams, 2018:3). This has various impacts on systems and the lives of people. This study was done in a hospital in the heart of South African coal mines and along the Maputo corridor. The results show that a total of 56 per cent (130) of the women who were South Africans according to recorded identity status, compared to 4 per cent (9) non-South Africans. Forty percent (92) of women’s records did not state the identity as required by the standard document of the Maternity Case record (MPDoH: 5). This was unclear if it is a record-keeping failure or women did not have their identity document. According to the Births and Deaths Registration Act, 51 of 1992, Section 1 of the act defines a stillbirth and requires every stillborn who existed in utero for more than 26 weeks has to be registered using a BI-1663.

An alarming report was announced by Department of Social Security Spokesperson, that from a Medical Research Council Report Emalahleni in Mpumalanga Province emerged ranking the second highest in South Africa in terms of drug and substance abuse (Nelspruit News, 16 August 2013:10h29). It was quite encouraging from this study to note that the women at Emalahleni were least affected by lifestyle issues of alcohol, drug abuse, smoking, and substance abuse. The results showed 83 per cent (191) mothers were a non-user of either tobacco, alcohol or drugs compared to 5 per cent (12) who were users but quit alcohol, however 15 per cent did not indicate if they were users, used or quit both drugs and alcohol and tobacco.

This study identified that population group disparities are still apparent from the findings of this study. In this study, results showed that 99 per cent (229) of the women who had stillbirths were from the black population group compared to 1 per cent (2) from the white and colored population groups of women. The area of Emalahleni is predominantly a semi-urban and rural area supported by a lot of informal settlements and farms in the surrounding. Therefore, these results cannot be treated conclusively that the stillbirths are extremely affecting the black population group without looking at

the population profile of the whole area and different population group utilization rate of the hospital maternal health care services.

5.3.2 Antenatal Factors contributing to the occurrence of stillbirths in a tertiary hospital

Antenatal factors were found to play a major role in the pregnancy outcome of stillbirths. Among the antenatal factors, late booking was identified as one of the factors that could have possibly contributed to the stillbirths of women at the tertiary hospital. The 56 per cent of the majority of the women booking in the second trimester is an indication that a collaborative effort with the referral sites needs to be summoned to motivate women to book early. In as much as the hospital does not primarily do the antenatal booking of pregnant women. Booking early will enable vital screening of all medical conditions and risks can be identified on time before pregnancy complications leading to occurrence of stillbirths can arise (Abuka et al., 2016:1). This is supported by (Ebonwu et al., 2018:16) stating that a delay in presenting for early antenatal care is a delayed opportunity to prevent adverse birth outcomes. However, on using Fisher's exact test, there was no association found between the timing of booking for the different trimester and stillbirths as the Fisher's exact score equalled a p-value of 0.327. Health promotion with encouraging messages of support should be done through various media forums and community forums. Primary health care facilities must work on the weekend to be accessible and to relieve long ques that pregnant women distaste and keep them away from clinics.

The findings of health education implementation were not in line with both the scope of practice for midwifery as well as basic nursing care**.** The scope of practice for a midwife requires her to give health education to every client that she renders care to, however, the findings revealed poor implementation of health education with majority 61 per cent of women not educated on danger signs of pregnancy. Even if the statistical tool testing did not yield significance association with the delivery outcome of stillbirths it can be noted that most women were not educated on pregnancy risk factors which were the main objective of the study. Some facilities designed health education forms which were attached to the files showing evidence of implementation of health education on pregnancy risk factors however very few files had those health education forms attached to the files. A uniform practice of teaching pregnant women and attaching the danger form to all maternal case record would assist in the reduction of the stillbirths. A positive result was found on teaching about breastfeeding that rated 74 per cent of the majority patients which is commendable but who will these mothers feed when they have failed to identify danger signs and babies die in utero, this is a question of priorities.

The general finding in this study was that the majority of the women who had stillbirths were healthy without any previous or identifiable disease. The healthy women totalled 69 per cent compared to 17 per cent who were diabetic, had hypertension, cardiac disease and Tuberculosis combined. Of the 17 per cent with chronic disease, 12 per cent was found to be the hypertensive disorders. (Lavin et al., 2018b:143) say that hypertension disorders are persistently leading causes of both maternal and perinatal death. Kujala et al. (2017:63) also found that 50 per cent of the stillbirths were not associated with any maternal condition. (Kujala et al., 2017:63) also found that 50 per cent of the stillbirths were not associated with any maternal conditions. Negligible as hypertension might seem, in terms of the 13 per cent, it is a serious factor that is life-threatening both to the mother and the unborn baby.

The findings showed that the majority of the women (32% - 75) in this study fell within a group of the women whose pregnancy was for the first time compared to the multiparas. There were similar findings to this study in Ethiopia where (Tilahun and Assefa, 2017:2) found that the majority of women with stillbirths were primigravidas compared to multiparas. This is asserted in Northwest Ethiopia where Amenu et al. (2015:8) found a significant association of knowledge on multiparous than primiparous which he attributed to multiparous being aware of health problems related to pregnancy due to previous experience. This must be prioritized by the Emalahleni subdistrict as such has serious psychological complications for one to experience a stillbirth with the first pregnancy.

Findings confirmed that 11 per cent (26) of records already had a previous intrauterine death which is supported by statistical testing with Fisher Exact s Test with a p-value F > 0.0534. The findings revealed that a pregnant woman who has had pregnancy loss before has a high chance of losing it again. According to BANC guidelines of 2005 on Principles of Good care revised in 2016 (Pattinson, 2016:C3, C5, C9, C17:) every woman who present with a history of previous or current pregnancy complications must be referred to the next higher level of care so that she can be closely managed by specialist to prevent further pregnancy complications and loss of baby.

The findings revealed that the majority of women were done vital data on all the visits which form the base of screening for risk to prevent stillbirths. There were no significant findings on the HIV blood test as the majority of women who tested positive were all on HAART which was encouraging as it exceeded the target of 90 90 90.

One of the recommendations of the Saving Babies Triennial report (2012 to 2016:11) is to improve pregnant mothers, awareness of foetal movements using a foetal kick count chart. Of concern in the findings of this study was lack of use of the foetal kick chart in the maternal case record of pregnant mothers after 28 weeks. The findings of the current study still reflect on health education needs of the pregnant mothers for them to be fully equipped to monitor their pregnancy and be able to detect reduced foetal movements on time. The fact that the majority, 80 per cent, of the women already reported in the hospital with intrauterine deaths confirmed at admission shows a need for education about pregnancy risk so that they can report to health facilities earlier. Strict measures on health education implementation will need to be put in place to ensure women are more empowered to take responsibility on their pregnancy in order to make a timeous decision when deviations from normal baby movements are experienced.

5.3.3 Intrapartum factors contributing to the occurrence of stillbirth in a tertiary hospital

The findings revealed that many (80%) of the babies are already dead in utero at admission as confirmed by a sonar diagnostic tool compared to the 20 per cent who were still alive on admission. With these findings, one can agree that the possible poor implementation of health education played a role, since mothers presented late for medical help with already intrauterine foetal deaths. Findings also showed inconsistency in the use of a partogram, which is a vital tool for monitoring the well-being of the baby and mother during the progress of labour. Women who presented with stillbirths at admission were excluded from monitoring with a partogram. Only those who came with a baby that was still alive at admission were monitored. Policy clarification is needed to understand when a partogram should be used and when not. The majority (83%) of women delivered normally with 15 per cent having delivered by caesarean section and 2 per cent with assisted delivery through a vacuum extraction. The delivery outcomes showed that 67 per cent of the babies were born macerated and 33 per cent were recent stillbirths, which highlights the quality of antenatal care.

Among these stillbirths, the majority (50%) were males and 48 per cent were females, with 2 per cent's records missing data. It was of great concern that among these stillborn babies, 1 per cent weighed more than 4000g. The majority (56%) fell within the range of 1000g to 2499g and those weighing between 2500g and 2999g constituted 14 per cent.

Bereavement counseling was found lacking as the majority (67%) of women showed no records reflecting implementation of counseling following delivery of stillbirths. The future birth plan was also

not well implemented as the majority of records did not indicate if a patient needed to book early or any further management before their next pregnancy. There were two types of discharge summaries, an internal institutional summary and another one in the maternal case record. This created discrepancies in terms of the follow up plan as the contents of both were not similar. Based on the summary comments from staff, it was deduced that 99 had confirmed intrauterine foetal deaths and 28 came reporting decreased foetal movements, 45 had hypertensive disorder complications of which 40 presented with placenta abruption, while 13 were recorded as congenital abnormalities.

5.4 RECOMMENDATIONS FOR PRACTICE

Health education is core to treatment of each and every pregnant woman. If stillbirths are to be reduced a high magnitude of primary health care level interventions is needed to turn around the tide of macerated stillbirths.

Every organizational structure to have health promotion coordinator to assist in conducting health education on a daily basis to every pregnant woman:

- A robust strategy focussed on pregnancy risks should be approached similarly to the HIV management strategies where many counselors are available to provide education, if stillbirths are to be reduced at all health facilities. The health promoter at each facility would oversee the giving of health education rather than leaving it to the midwives who are challenged by human resources as well as overwhelmed with other primary health care responsibilities.
- Regular open days for pregnant women should be conducted and promoted by using posters, pamphlets, leaflets and information on how to care for their pregnancy. Open days should focus on encouraging family and partner support to assist women in dealing with pregnancy risks.
- The District Health Teams should plan an intensive programme of educating women to identify early signs of pregnancy risk and report to the health facility timeously. A strong robust drive on education about pregnancy risk factors will benefit young adults through health promotion in the different forums of media. Media platforms and community forums such as religious and political gatherings should be used to expose the majority of people to an awareness of pregnancy risk factors and early booking for mothers. Although statistical testing with Fisher's exact test did not show significant association of age to stillbirths, it would be recommended to strengthen health education about pregnancy risks to all pregnant women of different age groups.
- It is important to note that during this study, a 13-year-old young girl experienced a stillbirth at this tender age. This calls for prosecution of those who violate children’s rights, as this child will

grow up with a first traumatic experience of childbirth at a tender age. Guidelines should be provided for hospitals that are in line with the Child Protection Act to give direction on how hospitals must handle such cases.

- With 80 per cent unemployment rate of mothers who delivered stillbirths, community forums and structures should start dialogues of self-run income generating projects to keep women occupied, self-reliant and more proactive on health issues. Therefore, it would assist to continue to strengthening policies already in place that create an environment of gender equity and mainstreaming in the labour market for women.
- Poor monitoring of women delivering stillbirths might result in maternal complications, therefore, a local institutional guideline needs to be developed to direct midwives in regard to using a partogram on mothers who present with a stillborn. Although it might be that baby is not alive anymore, there is a need to monitor the maternal condition, contractions, cervical dilation and progress of labour.
- Building a local level one hospital might improve the efficiency of the hospital and decrease the stillbirth rate so that the hospital does not just receive uncomplicated women with intrauterine foetal death for delivering stillbirths without maternal complications, but focuses on those that are related to maternal complication as a referral tertiary hospital. This recommendation needs to be taken to a higher level policy makers so that equitable distribution of health services can be achieved and later decrease the stillbirth rate of the tertiary hospital.
- The recommendation is to establish a standard operating procedure of managing women who have had stillbirths, this can be incorporated in the maternity care guideline so that women are closely followed and prepared for the next pregnancy and managed. This is where the maternity homes come into effect as a way of monitoring those at risk of losing their babies.
- Establishing an institutional policy on bereavement counseling will benefit the mothers to deal with their loss within an environment of support and spirit of ‘UBUNTU”. Some countries, for example Ireland, have established bereavement professionals and chaplainship for support of the parents as well as the staff. The establishment of a bereavement champion in the tertiary hospital could support mothers in the event of losing their baby to prevent secondary complications of depression and suicidal ideation results.

5.5 RECOMMENDATION FOR FURTHER RESEARCH

This research can be used as the baseline results on measuring the effectiveness of BANC PLUS in evaluating if the number of stillbirths have declined in the tertiary hospital following implementation of the new WHO Guideline BANC PLUS with increased antenatal visits. Therefore, this same study

can be repeated after 3 years for analyzing the effectiveness of BANC PLUS on the reduction of stillbirths in the tertiary hospital.

Further research can be done to investigate what are factors or barriers in the implementation of health education to pregnant mothers at primary health care settings, as results have shown the poor implementation of health education on the danger signs of pregnancy.

Further research can be done on the experiences of mothers who delivered stillbirths in utilizing a foetal kick count chart.

5.6 CONTRIBUTION TO BODY OF KNOWLEDGE

This study will assist the hospital in making improvement plans together with the primary health care facilities with regard to health education implementation at antenatal care level. This might reduce the stillbirth rate of 25 per 1000 live births towards the sustainable development goals target of 10 per 1000 live births by 2030.

The proposed highlighting of pregnancy danger signs on the maternity case record inner cover could serve as permanent visual aid awareness for all mothers to be reminded about risks they should act on.

The proposed inclusion of health education on risk factors in the maternity case record will serve as embedded evidence measure on the implementation of health education for both health practitioners and mothers.

The permanent inclusion of a foetal kick count chart in the maternal case record in all maternity case records will assist in easy teaching for mothers as well as recording. It has been noted that some case records do have records of foetal kick count but some did not have in the files of women who delivered stillbirths.

With the establishment of a standard operating procedure for the management of mothers who have delivered stillbirths in the tertiary hospital, there would be effective counseling of mothers post stillbirth delivery, which will reduce the secondary health implications such as depression, parasuicide and other psychological health implications. These research findings will serve as a basis for quality improvement in regard to record keeping, the use of a partogram on mothers with intrauterine deaths and discharge summaries for follow up care.

Feedback of the research to the district obstetric team will enable all staff to understand their key role and impact on the outcomes of mothers' pregnancies in areas of health education, the need for better pregnancy outcomes and to ensure a coordinated effort to reduce the occurrence of stillbirths within the tertiary hospital.

5.7 LIMITATIONS

Limitation in this study occurred during data collection and was primarily on the poor record keeping which emerged around the information. It mainly dealt with incomplete or poor record keeping. This created a delay as some of the information was missing in the maternity records and needed to be verified with the maternity register information, resulting in a misunderstanding on whether it was an act of omission from the health care worker or if it was inapplicable to the client in question. This study relied purely on the records, therefore, a degree of risk of authenticity cannot be ruled out.

5.8 FINAL CONCLUSION

The purpose of the study was to determine factors contributing to the occurrence of stillbirths in a tertiary hospital in Mpumalanga. This study generally highlighted a key need for improvement in antenatal care factors. With the evidence showing the majority of women reporting to the tertiary hospital with report of intrauterine death or having reduced foetal movement for days, one can suggest that the high stillbirth rate is not primarily the tertiary hospital's direct cause of care, but contributed to mostly by the referring PHC facilities. The high percentage of macerated stillbirths that arrived already dead in utero supports the need for improvement in antenatal care at primary health care level. Therefore, this study created insight into where the efforts of an improvement plan should be directed and focussed if stillbirths were to be reduced in the tertiary hospital. The main highlight factor was found to be on providing health education during antenatal care. Health education on foetal kick count and pregnancy risk factors would be beneficial for mothers to detect anomalies and report to the health facility earlier. With the majority of women showing no evidence of receiving

health education on pregnancy risk factors, this signaled a need for a turnaround strategy on teaching women about pregnancy risk factors. Health education is an important tool of care that has minimal financial implications, therefore, an improved integrated approach will serve as a cost-effective modality in reducing stillbirths and this will finally improve quality of life of all pregnant mothers and improve the quality of care in service delivery leading to compliance to targets of stillbirth's reduction.Therefore, the conclusion can be reached that there should be a robust improvement plan which includes tertiary and primary health care level practitioners in addressing issues of health education as a factor in contributing to the occurrence of stillbirths.

REFERENCES

Abuka, T., Alemu, A., Birhanu, B. 2016. Assessment of timing of first antenatal care booking and associated factors among pregnant women who attend antenatal care at health facilities in Dilla town, Gedeo zone, southern nations, nationalities and peoples region, Ethiopia, 2014. J Preg Child Health, 3 (258):2.

Adewemimo, A.W., Msuya, S.E., Olaniyan, C.T., Adegoke, A.A. 2014. Utilization of skilled birth attendance in northern Nigeria: A cross-sectional survey. Midwifery, 30(1):e7-e13.

Afulani, P.A. 2016. Determinants of stillbirths in Ghana: Does the quality of antenatal care matter? BMC Pregnancy and Childbirth, 16 (1):132.

Ahsan, J., Ayub, R., Gul, R., Zafar, U., Khan, U.A. 2017. Assessment of risk factors for high-risk pregnancy. Journal of Medical Sciences (Peshawar), 25(1):41-4.

Al-Ateeq, M.A., Al-Rusaiess, A.A. 2015. Health education during antenatal care: The need for more. International Journal of Women's Health, 7239-42.

Amenu, G., Endale, Z., Seyoum, T., Bayu, H. 2016. Knowledge about danger signs of obstetric complications and associated factors among postnatal mothers of Mechekel district health centers, East Gojjam Zone, Northwest Ethiopia, 2014. Add publisher details.

Amroussia, N., Hernandez, A., Vives-Cases, C., Goicolea, I. 2017. “Is the doctor god to punish me?” an intersectional examination of disrespectful and abusive care during childbirth against single mothers in Tunisia. Reproductive Health, 14(1):32.

Anggondowati, T., El-Mohandes, A.A., Qomariyah, S.N., Kiely, M., Ryon, J.J., Gipson, R.F., et al. 2017. Maternal characteristics and obstetrical complications impact neonatal outcomes in Indonesia: A prospective study. BMC Pregnancy and Childbirth. 17(1):100.

Association, A.D. 2016. 2. Classification and diagnosis of diabetes. Diabetes Care. 39(Supplement 1):S13-S22.

Austin-Evelyn, K., Rabkin, M., Macheka, T., Mutiti, A., Mwansa-Kambafwile, J., Dlamini, T., et al. 2017. Community health worker perspectives on a new primary health care initiative in the eastern cape of South Africa. PloS One, 12(3):e0173863.

Balayla, J., Azoulay, L., Abenhaim, H.A. 2011. Maternal marital status and the risk of stillbirth and infant death: A population-based cohort study on 40 million births in the United States. Women's Health Issues, 21(5):361-5.

Bamford, L. 2013. Maternal newborn and child health. South African Health Review, 201249-66.
Bateman, C. 2011. Stillbirths: An invisible earthquake. SAMJ: South African Medical Journal, 101(6):364-6.

Beauclair, R., Petro, G., Myer, L. 2014. The association between timing of initiation of antenatal care and stillbirths: A retrospective cohort study of pregnant women in Cape Town, South Africa. BMC Pregnancy and Childbirth, 14(1):204.

Bedwell, C., Levin, K., Pett, C.,Lavender, D.T. 2017. A realist review of the partograph: When and how does it work for labour monitoring? BMC Pregnancy and Childbirth. 17(1):31.

Bintabara, D., Mpembeni, R.N.M., Mohamed, A.A. 2017. Knowledge of obstetric danger signs among recently-delivered women in Chamwino District, Tanzania: A cross-sectional study. BMC Pregnancy and Childbirth, 17276.

Biya, T.T., Chokwe, M.E., Wright, S.C. 2014. The effectiveness of a pregnancy leaflet to promote health in Tshwane, South Africa. Health SA Gesondheid, 19(1):1-7.

Brink, H., Van Der Walt, C., Van Rensburg, G.H. 2006. Fundamentals of research methodology for health care professionals. Cape Town, Juta.

Carolan, M. 2013. Maternal age ≥45 years and maternal and perinatal outcomes: A review of the evidence. Midwifery, 29 (5):479-89.

Chaibva, B.V. 2014. Determinants of adverse pregnancy outcomes in Mutare district clinics, Manicaland Province, Zimbabwe. The University of Pretoria.

Chuwa, F.S., Mwanamsangu, A.H., Brown, B.G., Msuya, S.E., Senkoro, E.E., Mali, O.P., et al. 2017. Maternal and fetal risk factors for stillbirth in northern Tanzania: A registry-based retrospective cohort study. PloS One, 12(8):e0182250.

Clarke, M. 2014. Vlok's community health. Cape Town: South Africa.
Crush, J., Williams, V. 2018. Making up the numbers: Measuring "illegal immigration" to South Africa. Add publisher details.

De Bernis, L., Kinney, M.V., Stones, W., Ten Hope-Bender, P., Vivio, D., Leisher, S.H., et al. 2016. Stillbirths: Ending preventable deaths by 2030. The Lancet, 387(10019):703-16.

Dennill, K., Rendall-Mkosi, K.M. 2012. Primary health care in Southern Africa: A comprehensive approach. Oxford University Press.

Denzin, N.K., Lincoln, Y.S. 2005. The sage handbook of qualitative research. Sage Publications Ltd.

Dippenaar, J. & da Serra, D. Midwifery. 2012. 2nd edn. Cape Town: Juta and Company Ltd.

Downe, S., Schmidt, E., Kingdon, C., Heazell, A.E. 2013. Bereaved parents' experience of stillbirth in UK hospitals: A qualitative interview study. BMJ open, 3(2):e002237.

Dziuban, C., Moskal, P., Hartman, J. 2005. Higher education, blended learning, and the generations: Knowledge is power: No more. Elements of quality online education: Engaging communities. Needham, MA: Sloan Center for Online Education. 88-9.

Ebonwu, J., Mumbauer, A., Uys, M., Wainberg, M.L., Medina-Marino, A. 2018. Determinants of late antenatal care presentation in rural and peri-urban communities in South Africa: A cross-sectional study. PloS One, 13(3):e0191903.

Froen, J.F., Friberg, I.K., Lawn, J.E., Bhutta, Z.A., Pattinson, R.C., Allanson, E.R., et al. 2016. Stillbirths: Progress and unfinished business. The Lancet, 387(10018):574-86.

Gold, K.J., Sen, A., Leon, I. 2018. Whose fault is it anyway? Guilt, blame, and death attribution by mothers after stillbirth or infant death. Illness, Crisis & Loss, 26(1):40-57.

Goldenberg, R.L., Saleem, S., Pasha, O., Harrison, M.S., McClure, E.M. 2016. Reducing stillbirths in low-income countries. Acta Obstetricia et Gynecologica Scandinavia, 95 (2):135-43.

Group, S.C.R.N.W. 2011. Association between stillbirth and risk factors known at pregnancy confirmation. JAMA: the journal of the American Medical Association, 306 (22).

Gumede, S., Black, V., Naidoo, N., Chersich, M.F. 2017. Attendance at antenatal clinics in inner-city Johannesburg, South Africa and its associations with birth outcomes: Analysis of data from birth registers at three facilities. BMC Public Health, 17(3):443.

Heazell, A.E., Siassakos, D., Blencowe, H., Burden, C., Bhutta, Z.A., Cacciatore, J., et al. 2016. Stillbirths: Economic and psychosocial consequences. The Lancet, 387(10018):604-16.

Hofman, K. 2015. Stillbirths: A story of tragic neglect across the developing world. SABC. July 22: 6.06 am. The Conversation. SAST. School of Health Science. The University of Witswaterand.

Hofmeyer, G., Mentrop, L. 2015a. Time for' basic antenatal care plus' in South Africa? SAMJ: South African Medical Journal, 105(11):902-3.

Hofmeyer, G.J., Mentrop, L. 2015b. Time for 'basic antenatal care plus' in South Africa? : Editorial. South African Medical Journal, 105(11):902-3.

Hoque, M., Hoque, E., Kader, S. 2009. Risk factors for anaemia in pregnancy in rural KwaZulu-Natal, South Africa: Implication for health education and health promotion. South African Family Practice, 51(1):68-72.

Horton, R. 2016. 'Offline: Stillbirths—the last great myth'. The Lancet, 387 (10017):418. doi: 10.1016/s0140-6736 (16)00159-8.

Horton, R., Samarasekera, U. 2016. Stillbirths: Ending an epidemic of grief. The Lancet, 387 (10018):515-6.

Imdad, A., Lassi, Z., Salaam, R., Bhutta, Z.A. 2017. Prenatal nutrition and nutrition in pregnancy: Effects on long-term growth and development. Early nutrition and long-term health. Elsevier.

Imdad, A., Yakoob, M.Y., Bhutta, Z.A. 2011. Impact of maternal education about complementary feeding and provision of complementary foods on child growth in developing countries. BMC Public Health, 11(3):S25.

Iyanda, A., Oppong, J.,Omotoso, O. 2018. The influence of antenatal care system on ghanaian women's preference of public or private delivery facility. African Journal of Applied Research (AJAR). 4(1):27-39.

Jahani, M.A., Akbarian Rad, Z., Naghavian, M., Salmanian, T., Haghshenas Mojaveri, M. 2015. Factors affecting stillbirth rate in the hospitals affiliated to Babul University of Medical Sciences. Iranian Journal of Neonatology IJN, 6(3):22-7.

Jibril, U.N., Saleh, G.N., Badaki, O., Anyebe, E.E., Umar, A.,Kamal, A. 2018. Health education intervention on knowledge and accessibility of pregnant women to antenatal care services in edu, kwara state, nigeria. International Journal of Womens Health and Reproduction Sciences. 6(2):154-60.

Jindal, A., Thakur, R., Minhas, S. 2018a. Causes of stillbirth according to different gestational ages. International Journal of Reproduction, Contraception, Obstetrics, and Gynecology, 7(3):1029.

Jindal, A., Thakur, R., Minhas, S. 2018b. Causes of stillbirth according to different gestational ages. International Journal of Reproduction, Contraception, Obstetrics, and Gynecology, 7(3):1029-34.

Karaçam, Z., Kurnaz, D.A.,Güneş, G. 2017. Evaluating the content and quality of intrapartum care in vaginal births: An example of a state hospital. Turkish journal of obstetrics and gynecology. 14(1):10.

Kaswa, R., Rupesinghe, G.F., Longo-Mbenza, B. 2018b. Exploring the pregnant women's perspective of late booking of antenatal care services at Mbekweni Health Centre in Eastern Cape, South Africa. African Journal of Primary Health Care & Family Medicine,10(1):1-9.

Kaswa, R., Rupesinghe, G.F.D., Longo-Mbenza, B. 2018a. Exploring the pregnant women's perspective of late booking of antenatal care services at Mbekweni health centre in Eastern Cape, South Africa. African Journal of Primary Health Care & Family Medicine, 10(1):e1-e9.

Kiguli, J., Munabi, I.G., Ssegujja, E., Nabaliisa, J., Kabonesa, C., Kiguli, S., et al. 2016. Stillbirths in sub-Saharan Africa: Unspoken grief. The Lancet, 387 (10018):e16-e8.

Klein, M.C., Kaczorowski, J., Tomkinson, J., Hearps, S., Baradaran, N. & Brant, R. 2011. Family physician who provide intrapartum care and those who do not. Very different ways of viewing childbirth. Canadian Family Physician, 2011 (57):139-47.

Kujala, S., Waiswa, P., Kadobera, D., Akuze, J., Pariyo, G., Hanson, C. 2017. Trends and risk factors of stillbirths and neonatal deaths in eastern Uganda (1982–2011): A cross-sectional, population-based study. Tropical Medicine and International Health, 22 (1):63-73.

Landau, L.B., Ramjathan-Keogh, K.,Singh, G. 2005. Xenophobia in South Africa and problems related to it, Forced Migration Studies Programme, University of the Witwatersrand Johannesburg.

Lavin, T., Pattinson, R.C. 2018. Does antenatal care timing influence stillbirth risk in the third trimester? A secondary analysis of perinatal death audit data in South Africa. BJOG: An International Journal of Obstetrics and Gynaecology, 125(2)**:**140-7.

Lavin, T., Pattinson, R.C. 2018a. Does antenatal care timing influence stillbirth risk in the third trimester? A secondary analysis of perinatal death audit data in South Africa. BJOG: An International Journal of Obstetrics and Gynaecology, 125(2):140-7.

Lavin, T., Pattinson, R.C. 2018b. Does antenatal care timing influence stillbirth risk in the third trimester? A secondary analysis of perinatal death audit data in South Africa. BJOG: An International Journal of Obstetrics and Gynaecology, 125(2):140-7.

Lean, S.C., Derricott, H., Jones, R.L., Heazell, A.E. 2017. Advanced maternal age and adverse pregnancy outcomes: A systematic review and meta-analysis. PloS One, 12(10):e0186287.

Luque-Fernandez, M.A., Lone, N.I., Gutierrez-Garitano, I., Bueno-Cavanillas, A. 2011. Stillbirth risk by maternal socioeconomic status and country of origin: A population-based observational study in Spain, 2007–08. The European journal of Public Health, 22(4):524-9.

Macdorman, M.F., Gregory, E.C. 2015. Fetal and perinatal mortality: United States, 2013. National vital statistics reports: from the Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, 64(8):1-24.

Mangesi, L., Hofmeyr, G.J., Smith, V.,Smyth, R.M. 2015. Fetal movement counting for assessment of fetal wellbeing. Cochrane Database of Systematic Reviews. (10)

Meaney, S. 2016. Causes and consequences of pregnancy loss and perinatal death. Add publisher details.

Meaney, S., Everard, C.M., Gallagher, S., O'donoghue, K. 2017. Parents' concerns about future pregnancy after stillbirth: A qualitative study. Health Expectations, 20(4):555-62.

Michalow, J., Chola, L., Mcgee, S., Tugendhaft, A., Pattinson, R., Kerber, K., et al. 2015. Triple return on investment: The cost and impact of 13 interventions that could prevent stillbirths and save the lives of mothers and babies in South Africa. BMC Pregnancy and Childbirth, 15(1):39.

Miller, K., Encyclopaedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition. © 2003 by Saunders, an imprint of Elsevier.

Miller, L.A., Miller, D.A., Cypher, R.L. 2017. Mosby's pocket guide to fetal monitoring-e-book: A multidisciplinary approach. Elsevier Health Sciences.

Mills, T.A., Lavender, T. 2014. Advanced maternal age. Obstetrics, Gynaecology & Reproductive Medicine, 24(3):85-90.

Mokhondo, K.R. 2010. The effect of involving the private practitioners on the quality of antenatal care of the indigent population of Tembisa. The University of Pretoria.

Morake, V., Phiri, S.S., Van Der Wath, A.E. 2016. Nursing students' experiences of caring for women with stillbirths at public hospitals in Gauteng province, South Africa. African Journal for Physical Activity and Health Sciences (AJPHES), 22 (Issue-41):965-76.

Morrison, J.L., Regnault, T.R. 2016. Nutrition in pregnancy: Optimising maternal diet and fetal adaptations to altered nutrient supply. Multidisciplinary Digital Publishing Institute.

Mpumalanga Department of Health. 2016. Maternity Case Record. Mpumalanga Provincial Health. The Republic of South Africa.

Mpumalanga Department of Health. 2016. Perinatal Mortality and Morbidity minutes. Tertiary Hospital. Department of Obstetrics and Gynaecology. Mpumalanga Department of Health.

Musafili, A., Persson, L.-Å., Baribwira, C., Påfs, J., Mulindwa, P.A., Essén, B. 2017. Case review of perinatal deaths at hospitals in Kigali, Rwanda: Perinatal audit with application of a three-delays analysis. BMC Pregnancy and Childbirth. 17(1)**:**85.

Nakanishi, S., Aoki, S., Nagashima, A.,Seki, K. 2017. Incidence and pregnancy outcomes of superimposed preeclampsia with or without proteinuria among women with chronic hypertension. Pregnancy Hypertension: An International Journal of Women's Cardiovascular Health. 739-43.

National Department of Health. 2012. A Strategic Plan for Maternal, Newborn, Child and Women's Health (MNCWH) and Nutrition in South Africa 2012-2016. Pretoria: National Department of Health. Republic of South Africa

National Department of Health. 2015a. SA National Consolidated Guidelines for Prevention of Mother to Child Transmission of HIV and the Management of HIV in Children, Adolescents and Adults. National Department of Health. The Republic of South Africa.

National Department of Health. 2015b. Guidelines for Maternity Care in South Africa: A manual for clinics, community health. 2015. 4th edn. National Department of Health. The Republic of South Africa.

National Department of Health. National Health Act, 2003 Act No 61 of 2003 Regulation 185. Government Gazette 2 March (2012:6).

National Department of Health. National Perinatal and Mortality and Morbidity Committee. Short Report 2014.Department of Health. The Republic of South Africa.

Ndidi, E., Oseremen, I. 2010. Reasons given by pregnant women for late initiation of antenatal care in the Niger delta, Nigeria. Ghana Medical Journal, 44 (2).

Ndlovu, M. 2011. Stillbirths – An invisible earthquake. SAMJ, Vol, 101: 6.

Neal, J.L., Lowe, N.K., Caughey, A.B., Bennett, K.A., Tilden, E.L., Carlson, N.S., et al. 2018. Applying a physiologic partograph to consortium on safe labor data to identify opportunities for safely decreasing cesarean births among nulliparous women. Birth. 45(4):358-67.

Nierenberg, C.2014.Pregnancy diet & Nutrition: What to eat, What not to eat. Live Science>Health September 17, 2014 09:54 ET.

Ogwulu, C.B., Jackson, L.J., Heazell, A.E., Roberts, T.E. 2015. Exploring the intangible economic costs of stillbirth. BMC Pregnancy and Childbirth, 15(1):188.

Okochi, O.D., Isah, A.D., Agida, T.E.,Adewole, N. 2018. Stillbirth at a nigerian tertiary hospital. Open Journal of Obstetrics and Gynecology. 8(08):756.

Ongeso, A., Lukorito, M., Kabo, J. 2018. Factors influencing high prevalence of fresh stillbirths in Mbagathi County Hospital, Nairobi-Kenya. International Journal of Advanced Research, 6 (4):36.

Organization, W.H. 2016. Who recommendations on antenatal care for a positive pregnancy experience. World Health Organization.

Owais, A., Faruque, A.S.G., Das, S.K., Ahmed, S., Rahman, S., Stein, A.D. 2013. Maternal and antenatal risk factors for stillbirths and neonatal mortality in rural Bangladesh: A case-control study. PloS One, 8(11):e80164.

Oxford South African School Dictionary.3rd ed. Oxford University Press Southern Africa. Pty. Ltd. ABC press Cape Town. 2010. p.218.

Patience, N.T., Sibiya, M.N., Gwele, N.S. 2016. Evidence of application of the basic antenatal care principles of good care and guidelines in pregnant women's antenatal care records. African Journal of Primary Health Care & Family Medicine, 8(2).

Pattinson, R. 2005. Basic antenatal care principles of good care and guidelines. Pretoria: University of Pretoria.

Pattinson, R.C. (ed): Saving Mothers Annual Report 2014. An annual and detailed analysis of maternal deaths due to non-pregnancy related infections. National Department of Health 2014. Republic of South Africa.

Petro, S.J. 2015. Drawing close to the broken-hearted: Pastoral responses to parents grieving stillbirth. Journal of Pastoral Care & Counseling, 69(1):13-8.

Poels, M. 2017. Preconception care-who cares?: Perspectives from prospective parents and healthcare providers. Utrecht University.

Poels, M., Lamain-De Ruiter, M., Van Stel, H.F., Kwee, A., Bekker, M.N., Franx, A., et al. 2017. Modifiable lifestyle factors before and during early pregnancy and the risk of adverse pregnancy outcomes. Preconception Care-Who cares? 23.

Polit, D.F., Beck, C.T. 2008. Nursing research: Generating and assessing evidence for nursing practice. Lippincott Williams & Wilkins.

Pope, D., Stanistreet, D. 2017. Quantitative methods for health research: A practical interactive guide to epidemiology and statistics. John Wiley & Sons.

Preciado, A.,D'anna-Hernandez, K. 2017. Acculturative stress is associated with trajectory of anxiety symptoms during pregnancy in mexican-american women. Journal of Anxiety Disorders. 4828-35.

Raatikainen, K., Huurinainen, P., Heinonen, S. 2007. Smoking in early gestation or through pregnancy: A decision crucial to pregnancy outcome. Preventive Medicine, 44 (1):59-63.

Räisänen, S., Hogue, C.J., Laine, K., Kramer, M.R., Gissler, M., Heinonen, S. 2018. A population-based study of the effect of pregnancy history on risk of stillbirth. International Journal of Gynecology & Obstetrics, 140 (1):73-80.

Rhoda, N., Greenfield, D., Muller, M., Prinsloo, R., Pattinson, R., Kauchali, S., et al. 2014. Experiences with perinatal death reviews in South Africa—the perinatal problem identification programme: Scaling up from programme to province to country. BJOG: An International Journal of Obstetrics and Gynaecology, 121160-6.

Saaka, M., Aryee, P., Ali, M.,Masahudu, A.R. 2017. The effect of social behavior change communication package on maternal knowledge in obstetric danger signs among mothers in east mamprusi district of ghana. Globalization and health. 13(1):19.

Saaka, M., Oladele, J., Larbi, A., Hoeschle-Zeledon, I. 2017. Dietary diversity is not associated with haematological status of pregnant women resident in rural areas of northern Ghana. Journal of Nutrition and Metabolism, 2017.

Shapiro, G.D., Bushnik, T., Wilkins, R., Kramer, M.S., Kaufman, J.S., Sheppard, A.J., et al. 2018. Adverse birth outcomes in relation to maternal marital and cohabitation status in Canada. Annals of Epidemiology.

Singh, S., Biswas, M. 2017. Ideal antenatal care-does it exist? In Stevenson, J.E. 2016. Documentation of vital signs in electronic health records: A patient safety issue. The University of Sheffield. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 5(5):1285-91.

Tekelab, T.,Berhanu, B. 2014. Factors associated with late initiation of antenatal care among pregnant women attending antenatal clinic at public health centers in kembata tembaro zone, southern ethiopia. Science, Technology and Arts Research Journal. 3(1):108-15.

Tilahun, D., Assefa, T. 2017. Incidence and determinants of stillbirth among women who gave birth in Jimma university specialized hospital, Ethiopia. Pan African Medical Journal, 28(1).

Towsley-Cook, D.M., Young, T.A. 2013. Ethical and legal issues for imaging professionals-e-book, Elsevier Health Sciences.

Tshibumbu, D.D., Blitz, J. 2016a. Modifiable antenatal risk factors for stillbirth amongst pregnant women in the Omusati region, Namibia: Original research. African Journal of Primary Health Care and Family Medicine, 8(1):1-6.

Tshibumbu, D.D., Blitz, J. 2016b. Modifiable antenatal risk factors for stillbirth amongst pregnant women in the Omusati region, Namibia. African Journal of Primary Health Care & Family Medicine, 8(1):1-6.

Tunkyi, K., Moodley, J. 2017. Anaemia in pregnancy in a setting of high HIV prevalence rates. Southern African Journal of Infectious Diseases, 32(4):138-41.

Tveit, J.V.H., Saastad, E., Stray-Pedersen, B., Børdahl, P.E., Flenady, V., Fretts, R., et al. 2009. Reduction of late stillbirth with the introduction of fetal movement information and guidelines–a clinical quality improvement. BMC Pregnancy and Childbirth, 9 (1):32.

Vickers, P., Offredy, M. 2010. The web program: Writing a research proposal.

Williams, A.D., Wallace, M., Nobles, C., Mendola, P. 2018. Racial residential segregation and racial disparities in stillbirth in the United States. Health & Place, 51208-16.

World Health Organisation 2018. WHO recommendations: intrapartum care for a positive birth experience. Geneva: Licence CC BY_SA 3, 0 1GO.

World Health Organisation. 2016. Making Every Baby Count. Audit and review of stillbirths and neonatal deaths. Geneva. World Health Organisation: 2016.

Yisma, E., Dessalegn, B., Astatkie, A.,Fesseha, N. 2013. Knowledge and utilization of partograph among obstetric care givers in public health institutions of addis ababa, ethiopia. BMC Pregnancy and Childbirth. 13(1):17.

Zeitlin, J.A., Saurel-Cubizolles, M.J., Ancel, P.Y., Group, E. 2002. Marital status, cohabitation, and the risk of preterm birth in Europe: Where births outside marriage are common and uncommon. Paediatric and Perinatal Epidemiology, 16(2):124-30.

ANNEXURE A

DECLARATION OF ORIGINALITY

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

DECLARATION OF ORIGINALITY

UNIVERSITY OF PRETORIA

The Department of **Health Sciences, University of Pretoria** places great emphasis upon integrity and ethical conduct in the preparation of all written work submitted for academic evaluation.

While academic staff teaches you about referencing techniques and how to avoid plagiarism, you too have a responsibility in this regard. If you are at any stage uncertain as to what is required, you should speak to your lecturer before any written work is submitted.

You are guilty of plagiarism if you copy something from another author's work (e.g. a book, an article or a website) without acknowledging the source and pass it off as your own. In effect, you are stealing something that belongs to someone else. This is not only the case when you copy work word-for-word (verbatim), but also when you submit someone else's work in a slightly altered form (paraphrase) or use a line of argument without acknowledging it. You are not allowed to use work previously produced by another student. You are also not allowed to let anybody copy your work with the intention of passing it off as his/her work.

Students who commit plagiarism will not be given any credit for plagiarised work. The matter may also be referred to the Disciplinary Committee (Students) for a ruling. Plagiarism is regarded as a serious contravention of the University's rules and can lead to expulsion from the University.

ANNEXURE A DECLARATION OF ORIGINALITY

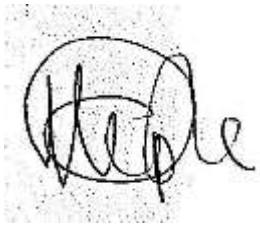
The declaration that follows must accompany all written work submitted while you are a student of the Department of **...University of Pretoria, Health Science**

No written work will be accepted unless the declaration has been completed and attached.

Full names of student:	Chelesile Mhlophe
Student number:	98219759
Topic of work:	Factors contributing to the occurrence of stillbirths in a tertiary hospital in Mpumalanga province

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.
2. I declare that this **Dissertation** (e.g. essay, report, project, assignment, dissertation, thesis, etc.) is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.
3. I have not used work previously produced by another student or any other person to hand in as my own.
4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.



Chelesile Mhlophe — 982 197 59

SIGNATURE — **STUDENT NUMBER**

ANNEXURE B

DATA COLLECTING TOOL

DATA COLLECTING TOOL

INSTRUMENT TOOL FOR DATA COLLECTION ON FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS AT EMALAHLENI SUBDISTRICT IN MPUMALANGA PROVINCE.

Instructions:

1. Cross with an X in the appropriate answer box
2. Circle the appropriate answer if the answer is yes or no
3. Fill in the answer where the box is empty

SESSION A

DEMOGRAPHIC AND SOCIOECONOMIC FACTORS

1. Age

	Years

2. Marital status

Married	Single	Divorced	Cohabiting	Widowed

3. Educational background

Primary	Secondary	Tertiary	Diploma	Degree

4. Residential area/referring subdistrict

Emalahleni subdistrict	Emakhazeni subdistrict	Thembisile Hani subdistrict	J.S Moroka subdistrict	Steve Tshwete	Victor Khanye

5. Occupation

Employed	Not employed	At school	Self-employed

6. Population Group

Black	White	Indian	Coloured	Other

7. Identity

South African identity	non-South African identity	Other	Not written

8. Lifestyle Issues

	User	Quitter	Non-user
Tobacco			
Alcohol			
Drugs or substances			

SESSION B

ANTENATAL FACTORS

1. Booking status

Booked	Not Booked

2. Trimester of first ANC Visit

First	Second	Third

3. Gestational age at booking (indicate pregnancy duration in the box at booking time)

4. Booking place

clinic	Hospital	Private General Practitioner
Name of a referring facility		

5. Number of ANC visits

One	Two	Three	Four	Five and more

6. Health education given

Pregnancy risks	Diet and exercise	Breastfeeding	importance of antenatal care
yes/no	yes/no	Yes/no	Yes/no

7. Previous medical history

Hypertension	Epilepsy	Diabetes	Cardiac	TB	Healthy
Yes/no	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

8. Number of pregnancy (Gravidity)

one	Two	Three	Four	Five	six and more

9. Previous Obstetric risk factors

Miscarriage	Intrauterine death	Neonatal death	Infant death	pregnancy complication	Bleeding
Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

10. Vital signs and Blood test

Blood pressure All visits	Urine testing Protein, sugar, nitrites All visits	Mid Upper Arm Circumference (MUAC) All Visits		HIV 1st visit done	HIV test repeated every 12 weeks if negative	RPR 1st visit
		24 to 32cm				
Yes/No	Yes/No	>23cm	<33cm	Yes/No	Yes /No	Yes/No

11. Supplements given

Ferrous	Folate	Calcium	Tetanus toxoid	NONE
Yes/No	Yes/No	Yes/No	Yes/No	

12 Foetal kick count chart available and used.

foetal Kick count chart available		foetal Kick Count chart used	
yes	No	Yes	No

13. HIV STATUS

Reactive	Non-Reactive	Declined	HAART. Gestation when started anti-retroviral treatment
Yes/No	Yes/No	Yes/No	

SESSION C

INTRAPARTUM FACTORS

1. Status of the baby at admission

Initial Assessment done	Baby alive on arrival	Baby dead on arrival	Sonar done

2. Monitoring done on progress of labour until delivery using Partogram

yes	No	Not applicable

3. Mode of Delivery

Normal	C/section	Vacuum	Forceps
Yes/No	Yes/No	Yes/No	Yes/No

4. Delivery complication

None	Delayed 2nd stage	Caesarean section	Assisted Delivery	Placenta abruption	Cord Prolapse

5. Health care category delivering

Doctor	Advanced midwife	General midwife

6. Outcome of delivery

Fresh stillbirth	Macerated stillbirth

7. Sex of stillbirth

Male	Female

8. Weight category of stillbirth

500-999	1000-2499	2500- 2990	3000-3999	4000 and above

9. Counseling

Bereavement counseling done	Yes/no

10. Future Birth Plan

Future Birth Plan discussed	Yes /No

11. Give any four comments/ condition classification mentioned by health personnel related to this stillbirth

1.

2.

3.

4.

ANNEXURE C

LETTER FROM THE STATISTICIAN

LETTER FROM THE STATISTICIAN

BIOSTATISTICS UNIT

LETTER OF STATISTICAL SUPPORT

Date: 27/06/2017

This letter is to confirm that the researcher, CHELESILE MHLOPHE an MSc student at the School of Health Care Sciences, Department of Nursing Science Faculty of Health Sciences, University of Pretoria discussed the Project titled **"FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS IN A TERTIARY HOSPITAL"** with me.

I hereby confirm that I am aware of the project and also undertake to assist with the statistical analysis of the data generated from the project.

DATA ANALYSIS

To assess the risk factors contributing to the occurrence of stillbirth in a tertiary hospital in Emalahleni sub-district in Mpumalanga Province. Specific objectives include determination of antenatal factors contributing to occurrence of stillbirths at tertiary the intrapartum factors contributing to the occurrence of stillbirths at a tertiary hospital in Emalahleni sub district in Mpumalanga Province. This will be a retrospective review of records to be collected on those that have delivered within the period of January to December 2015 and 2016 inclusively and captured using a datasheet. The data analysis will be present descriptive presenting summary statistics in terms of frequencies, proportions and associated 95% confidence interval by grouping according to the demographic characteristics of the participants. Prevalence of stillbirth will be evaluate. Associated factors will be determine using Chi-square analysis relating prevalence with all factors (demographic and others related factors). Furthermore, Kruskal-Wallis will be used to compare proportions between demographic and logistic regressions will be used to identify factors associated with occurrence of still birth to achieve the objectives. The statistical tool that will be used is Stata 14.1/15 to achieve the objective.

SAMPLE SIZE

The records of all women who have delivered stillbirths from January 2015 to December 2016 will be purposefully selected from all files of women who have delivered in tertiary hospital at Mpumalanga Province will be used. The available records usual records are about 400.

Name Dr SAS Olorunju

Biostatistics Unit
MRC. Pretoria

Tel: 0123398553

SA MEDICAL RESEARCH COUNCIL
Biostatistics Unit
P/Bag X385
Pretoria RSA 0001
Tel: 0123398523

Signature

THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL
1 Soutpansberg Road, Pretoria, 0002 | Private Bag X385, Pretoria 0001, South Africa
Tel: +27 (0)12 339 8553 | Fax: +27 (0)12 339 8582 | Web: www.samrc.ac.za

ANNEXURE D

PERMISSION FROM CEO TO USE RECORDS

PERMISSION FROM CEO TO USE RECORDS

Permission to access Records / Files / Data base at the Witbank Hospital

To: Chief Executive Officer
Witbank Hospital

From: The Investigator
Chelesile Mhlophe
Hospital

Re: Permission to do research at WITBANK Hospital

I am a researcher working at the Nursing Management Unit, Department of Nursing at Witbank Hospital. I am requesting permission to conduct a study on Witbank Hospital grounds that involves access to patient records.

The request is lodged with you in terms of the requirements of the Promotion of Access to Information Act. No. 2 of 2000.

The title of the study is: FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS IN A TERIARY HOSPITAL

The researchers request access to the following information:

Access to the clinical files, record book and the data base.

I intend to publish the findings of the study in a professional journal and/ or at professional meeting like symposia, congresses, or other meetings of such a nature.

I intend to protect the personal identity of the patients by assigning each patient a random code number.

I undertake not to proceed with the study until we have received approval from the Faculty of Health Sciences Research Ethics Committee, University of Pretoria.

Yours sincerely

Signature of the Principle Investigator

CHELESILE MHLOPHE

Permission to do the research study at this hospital and to access the information as requested, is hereby approved.

Chief Executive Officer

MV Ratomela Hospital

Signature of the CEO

DEPARTMENT OF HEALTH
WITBANK HOSPITAL
2017 -05- 31
PRIVAATSAK / PRIVATE BAG X7206, WITBANK
MPUMALANGA PROVINCE

Hospital Official Stamp

ANNEXURE E

DECLARATION FOR STORAGE OF RESEARCH INFORMATION

DECLARATION FOR STORAGE OF RESEARCH INFORMATION

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

9.4 ANNEXTURE D; PRINCIPAL INVESTIGATOR'S DECLARATION FOR THE STORAGE OF RESEARCH DATA AND/OR DOCUMENTS

I, the Principal Investigator(s), CHELESILE MHLOPHE of the following study titled:

FACTORS CONTRIBUTING TO THE OCCURRENCE OF DELIVERY OF STILLBIRTHS IN A TERTIARY HOSPITAL

I will be storing all the research data and documents referring to the above mentioned study at the following non-residential address:

WITBANK HOSPITAL
P/BAG X7602
EMALAHLENI
1035

I understand that the storage for the abovementioned data and/or documents must be maintained for a minimum of 15 years from the end of this study.

START DATE OF STUDY: 01/07/2017 END DATE OF STUDY: 31/12/ 2017.

SPECIFIC PERIOD OF DATA STORAGE AMOUNTING TO NO LESS THAN 15 YEARS:

JULY 2017 until JULY 2033

Name: Chelesile Mhlophe

Signature

ANNEXURE F

LETTER OF APPROVAL FROM FACULTY OF HEALTH SCIENCE ETHICS COMMITTEE

LETTER OF APPROVAL FROM FACULTY OF HEALTH SCIENCE ETHICS COMMITTEE

The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.
- FWA 00002567, Approved dd 22 May 2002 and Expires 03/20/2022.
- IRB 0000 2235 IORG0001762 Approved dd 22/04/2014 and Expires 03/14/2020.

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

17/08/2017

Approval Certificate
New Application

Ethics Reference No: 306/2017

Title: FACTORS CONTRIBUTING TO THE OCCURRENCE OF STILLBIRTHS IN A TERTIARY HOSPITAL

Dear Mrs Chelesile Mhlophe

The **New Application** as supported by documents specified in your cover letter dated 4/08/2017 for your research received on the 7/08/2017, was approved by the Faculty of Health Sciences Research Ethics Committee on its quorate meeting of 17/08/2017.

Please note the following about your ethics approval:
- Ethics Approval is valid for 1 year
- Please remember to use your protocol number (**306/2017**) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research.

Ethics approval is subject to the following:
- The ethics approval is conditional on the receipt of **6 monthly written Progress Reports**, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers; MBChB; MMed (Int); MPharMed,PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health).

012 356 3084 deepeka.behari@up.ac.za / fhsethics@up.ac.za http://www.up.ac.za/healthethics
Private Bag X323, Arcadia, 0007 - Tswelopele Building, Level 4, Room 60, Gezina, Pretoria

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- FWA 00002567, Approved on 22 May 2002 and Expires 03/20/2022.
- IRB 0000 3235 IORG0001762 Approved on 22/01/2014 and Expires 01/14/2020

14 February 2019

Approval Certificate
Annual Renewal

Ethics Reference No.: 306/2017
Title: Factors contributing to the occurrence of stillbirths in a tertiary hospital

Dear Mrs C Mhlophe

The **Annual Renewal** as supported by documents received between 2019-02-06 and 2019-02-13 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on its quorate meeting of 2019-02-13.

Please note the following about your ethics approval:

- Renewal of ethics approval is valid for 1 year, subsequent annual renewal will become due on 2020-02-14.
- Please remember to use your protocol number (306/2017) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers
MBChB MMed (Int) MPharmMed PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health)

Research Ethics Committee
Room 4.00, Level 4, Tswelopele Building
University of Pretoria, Private Bag X323
Arcadia 0007, South Africa
Tel +27 (0)12 356 3084
Email deepeka.behari@up.ac.za
www.up.ac.za

Fakulteit Gesondheidswetenskappe
Lefapha la Disaense tša Maphelo

ANNEXURE G

DECLARATION OF HELSINKI

DECLARATION OF HELSINKI

Special Communication

World Medical Association Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects

World Medical Association

Adopted by the 18th WMA General Assembly, Helsinki, Finland, June 1964, and amended by the 29th WMA General Assembly, Tokyo, Japan, October 1975
35th WMA General Assembly, Venice, Italy, October 1983 41st WMA General Assembly, Hong Kong, September 1989
48th WMA General Assembly, Somerset West, Republic of South Africa, October 1996 52nd WMA General Assembly, Edinburgh, Scotland, October 2000
53rd WMA General Assembly, Washington, DC, USA, October 2002 (Note of Clarification added) 55th WMA General Assembly, Tokyo, Japan, October 2004 (Note of Clarification added)
59th WMA General Assembly, Seoul, Republic of Korea, October 2008 64th WMA General Assembly, Fortaleza, Brazil, October 2013

Preamble

1. The World Medical Association (WMA) has developed the Dec- laration of Helsinki as a statement of ethical principles for medi- cal research involving human subjects, including research on identifiable human material and data.

   The Declaration is intended to be read as a whole and each of its constituent paragraphs should be applied with consider- ation of all other relevant paragraphs.

2. Consistent with the mandate of the WMA, the Declaration is ad- dressed primarily to physicians. The WMA encourages others who are involved in medical research involving human subjects to adopt these principles.

General Principles

3. The Declaration of Geneva of the WMA binds the physician with the words, "The health of my patient will be my first consider- ation," and the International Code of Medical Ethics declares that, "A physician shall act in the patient's best interest when provid- ing medical care."

4. It is the duty of the physician to promote and safeguard the health, well-being and rights of patients, including those who are involved in medical research. The physician's knowledge and con- science are dedicated to the fulfilment of this duty.

5. Medical progress is based on research that ultimately must in- clude studies involving human subjects.

6. The primary purpose of medical research involving human sub- jects is to understand the causes, development and effects of diseases and improve preventive, diagnostic and therapeutic in- terventions (methods, procedures and treatments). Even the

   best proven interventions must be evaluated continually through research for their safety, effectiveness, efficiency, accessibility and quality.

7. Medical research is subject to ethical standards that promote and ensure respect for all human subjects and protect their health and rights.

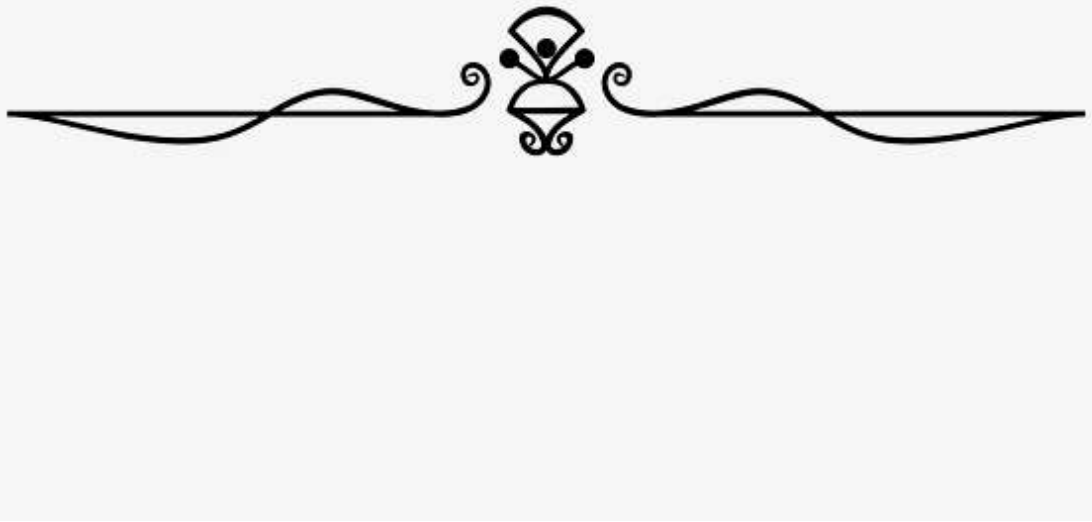
8. While the primary purpose of medical research is to generate new knowledge, this goal can never take precedence over the rights and interests of individual research subjects.

9. It is the duty of physicians who are involved in medical research to protect the life, health, dignity, integrity, right to self- determination, privacy, and confidentiality of personal informa- tion of research subjects. The responsibility for the protection of research subjects must always rest with the physician or other health care professionals and never with the research subjects, even though they have given consent.

10. Physicians must consider the ethical, legal and regulatory norms and standards for research involving human subjects in their own countries as well as applicable international norms and stan- dards. No national or international ethical, legal or regulatory re- quirement should reduce or eliminate any of the protections for research subjects set forth in this Declaration.

ANNEXURE H

LETTER TO REQUEST TO USE SOME OF THE INFORMATION ON A DATA COLLECTING TOOL



LETTER TO REQUEST TO USE SOME OF THE INFORMATION ON A DATA COLLECTING TOOL

From: **Chelesile Mhlophe** <u98219759@tuks.co.za>
Date: Tue, 25 Apr 2017 at 14:52
Subject: request to use some of information in your research Article on Determinants of stillbirths in Ghana: Does quality of antenatal care matter
To: <pafulani@ucla.edu>

Dear Afulani

My name is Chelesile Mhlophe, Student Number 98219759.I am studying Masters in Nursing Science with the University of Pretoria. During my Literature review i came across your above research article which I found very useful to my study.

I therefore kindly request to use some of the information on your data collecting tool relating to postpartum and intrapartum factors. My study is on Assessing contributing factors to the occurrence of stillbirths in Mpumalanga Province in South Africa.

Your Positive response will be highly appreciated

Kind Regards

Chelesile Mhlophe

S/N 98219759