IDENTIFYING THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG

by

SIDNEY DYWILI

MINI-DISSERTATION COMPLETED IN FULFILMENT OF A MASTERS DEGREE IN HEALTH PROFESSIONS EDUCATION (M. HPE)

DIVISION HEALTH SCIENCES EDUCATION
FACULTY OF HEALTH SCIENCES
UNIVERSITY OF THE FREE STATE
BLOEMFONTEIN

SUPERVISOR: PROF. DR W.J. STEINBERG
DIVISION OF FAMILY MEDICINE
FACULTY OF HEALTH SCIENCES
UNIVERSITY OF THE FREE STATE

FEBRUARY 2018

DECLARATION OF INDEPENDENT WORK

I, Sidney Thamsanqa Ishmael Dywili hereby declare that the work submitted by me to the University of the Free State is a result of my own investigation under the supervision of Prof. W.J. Steinberg and has not previously been submitted by me or any other person for obtaining of credits or a qualification. Where assistance was sought it has been correctly acknowledged. It is therefore the first time that this work is submitted at this university/faculty towards a Master's Degree in Health Professions Education.

Sidney Dywili **Date**

DEDICATION

I wish to dedicate this thesis to my wonderful wife, Tshegohatso Dywili, who has been a pillar of strength and source of support. Her unwavering love and affection kept me focused; without her sacrifices and prayers this would not have been possible. To our children, Thandolwethu and Lukhanyo, family members and friends, thank you very much for your support and prayers; you have kept me inspired and helped keep that great desire to do my best in my education alive.

ACKNOWLEDGEMENTS

It is with deep gratitude that I wish to express my appreciation of the valuable work done by the following people:

- My supervisor, Prof. Dr W.J. Steinberg from the Division of Family Medicine, Faculty of Health Sciences at the University of the Free State, for his continued support, guidance, encouragement and persistent help during the course of this study.
- Dr J. Bezuidenhout, Head: Division Health Sciences Education, Faculty of Health Sciences at the University of the Free State, for his continued support, guidance and persistent help during the course of this study.
- It is with great gratitude that I thank the Department of Health and National District Hospital (NDH) Maternity Unit for accommodating my academic needs, especially Mrs B. Ramodula and Miss S. Molieleng for your valuable contributions.
- Mr C. van Rooyen and Mr J. Raubenheimer, Biostatisticians of the Department of Biostatistics, Faculty of Health Sciences, University of the Free State; thank you very much for your assistance regarding the biostatistics in my study.
- Ms E.P. Robberts for her meticulous attention to detail in formatting of the layout of this dissertation.
- My wife, Tshegohatso Dywili and our children, Thandolwethu and Lukhanyo, for their unwavering support, love and affection. The sacrifices you made, will never be forgotten.
- My parents, Nenzane Michael and Maria Malefu, as well as my mother-in-law, Gaelebale Dibate, thank you for all your prayers and for continuously motivating me and believing in me.
- Last but by far not the least, I wish thank God for granting me this favour, knowledge, wisdom and the endurance to put all the information together; for blessing me with this great team of special individuals who have supported me in this study.

TABLE OF CONTENTS

CHAPTER 1 ORIENTATION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION 1
1.2 PROBLEM STATEMENT 2
1.3 THE OVERALL GOAL OF THE STUDY 3
1.4 THE AIM OF THE STUDY 3
1.5 OBJECTIVES OF THE STUDY 3
1.6 RESEARCH DESIGN 3
1.7 CONCLUSION 4

CHAPTER 2 BIRTHS BEFORE ARRIVAL (BBAS) IN THE MANGAUNG AREA

2.1 INTRODUCTION 5
2.2 MANGAUNG 5
2.3 POSSIBLE CAUSES OF BIRTHS BEFORE ARRIVAL 6
2.3.1 SOCIO-DEMOGRAPHIC VARIABLES 8
2.3.2 MATERNAL FACTORS 8
2.3.3 TRANSPORTATION 12
2.3.4 ANTENATAL FACTORS 12
2.3.5 PREPAREDNESS 13
2.3.6 EDUCATION 14
2.3.7 PERCEPTIONS LEADING TO BBA 14
2.3.8 SOCIO-ECONOMIC FACTORS 14
2.3.9 DISTANCE 15
2.3.10 ADVERSE MATERNAL OUTCOMES 16
2.3.11 OUTCOME OF NEWBORN 17
2.4 CONCLUSION 18

CHAPTER 3 METHODOLOGY

3.1 INTRODUCTION 19
3.2 THEORETICAL PERSPECTIVES ON THE RESEARCH DESIGN 19
3.2.1 STRATEGY OF INQUIRY 19
3.2.2 DATA COLLECTED 20
3.2.3 DATA ANALYSIS METHODS 20
3.2.4 PARTICIPANTS 20
3.2.5 POSSIBLE REASONS FOR BBAS 21
3.2.5.1 Socio-demographic variables 21
3.2.5.2 Maternal related questions (after delivery) 21
3.2.5.3 Transportation 21
3.2.5.4 Antenatal 22
3.2.5.5 Preparedness 22
3.2.5.6 Education 22
3.2.5.7 Perceptions leading to BBA 23
3.2.5.8 Socio-economic factors 24
3.2.6 MATERNAL AND NEONATAL OUTCOMES 24

3.2.6.1 Adverse maternal outcomes 24
3.2.6.2 Interventions on the participant upon admission to hospital 25
3.2.6.3 Outcome of newborn (at the time of admission) 25
3.3 CONCLUSION 26

CHAPTER 4 RESULTS FROM THE DATA COLLECTION TOOL

4.1 INTRODUCTION 27
4.2 PARTICIPANTS 27
4.2.1 DEMOGRAPHY OF PARTICIPANTS 27
4.2.1.1 Patients' Age (in Years) 27
4.2.1.2 Marital Status 28
4.2.1.3 Ethnicity 29
4.2.1.4 Level of education 29
4.2.1.5 Occupation 30
4.2.2 MATERNAL FACTORS 30
4.2.2.1 Parity 30
4.2.2.2 Gravidity 31
4.2.2.3 Being "booked" 32
4.2.2.4 Number of antenatal clinic visits 32
4.2.2.5 Decision to seek medical assistance for the delivery 33
4.2.2.6 Medical assistance for the delivery was sought by whom 33
4.2.2.7 Escorted to health facility 33
4.2.2.8 Presence of a birth attendant 34
4.2.2.9 Place of delivery of the BBA participants 34
4.2.3 TRANSPORTATION 35
4.2.3.1 Mode of transportation 35
4.2.3.2 Timing of the call requesting transportation (hours) 35
4.2.3.3 Transportation response time (hours) 36
4.2.3.4 Distance from home to the closest available health facility (Km) during the time when labour started 37
4.2.4 ANTENATAL FACTORS 37
4.2.5 PREPAREDNESS 39
4.2.6 KNOWLEDGE ABOUT LABOUR 39
4.2.7 EDUCATION 40
4.2.8 PERCEPTIONS THAT LEAD TO A BBA 42
4.2.9 SOCIO-ECONOMIC FACTORS 44
4.2.10 MATERNAL OUTCOMES 45
4.2.11 NEONATAL OUTCOMES 47
4.2.12 PARTICIPANTS' OPINIONS 48
4.3 CONCLUSION 50

CHAPTER 5 DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION 51
5.2 THE PURPOSE OF THE STUDY 51
5.3 DISCUSSION 51
5.3.1 SOCIO-DEMOGRAPHIC VARIABLES 52
5.3.2 MARITAL STATUS 52
5.3.3 ETHNICITY 52
5.3.4 LEVEL OF EDUCATION 52

5.3.5 OCCUPATION 52
5.3.6 MATERNAL FACTORS 53
5.3.7 BEING "BOOKED" 53
5.3.8 NUMBER OF ANTENATAL CLINIC VISITS 53
5.3.9 DECISION TO SEEK MEDICAL ASSISTANCE FOR THE DELIVERY 53
5.3.10 MEDICAL ASSISTANCE FOR THE DELIVERY WAS SOUGHT BY WHOM? 53
5.3.11 ESCORTED TO HEALTH FACILITY 54
5.3.12 PRESENCE OF A BIRTH ATTENDANT 54
5.3.13 TRANSPORTATION 54
5.3.13.1 Mode of transportation 54
5.3.13.2 Timing of the call requesting transportation (hours) 55
5.3.13.3 Transportation response time (hours) 55
5.3.14 DISTANCE FROM HOME TO THE CLOSEST AVAILABLE HEALTH FACILITY (KM) DURING THE TIME WHEN LABOUR STARTED 55
5.3.15 ANTENATAL FACTORS 55
5.3.16 PREPAREDNESS 56
5.3.17 EDUCATION 57
5.3.18 PERCEPTIONS LEADING TO BBAS 57
5.3.19 SOCIO-ECONOMIC FACTORS 58
5.3.20 DISTANCE 58
5.3.21 ADVERSE MATERNAL OUTCOMES 59
5.3.22 OUTCOMES FOR THE NEWBORN 59
5.4 PARTICIPANTS' OPINIONS 60
5.5 CONCLUSION 61

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION 62
6.2 THE OVERVIEW OF THE STUDY 62
6.3 OBJECTIVES OF THE STUDY 62
6.3.1 OBJECTIVE 1: LOCAL CAUSES OR CONTRIBUTING FACTORS LEADING TO BBAS, TARGET GROUPS AND OUTCOMES OF BBAS IN MANGAUNG AREA 63
6.3.2 OBJECTIVE 2: RECOMMENDATIONS FOR EDUCATIONAL AVENUES TO PREVENT BBAS IN MANGAUNG 64
6.4 CONCLUSION 65
6.5 LIMITATIONS OF THE STUDY 65
6.6 RECOMMENDATIONS 66
6.7 CONCLUDING REMARKS 68

REFERENCES 69

APPENDICES:

APPENDIX A: **INTERVIEW QUESTIONNAIRE**
APPENDIX B: **INVITATION TO PARTICIPATE IN THE RESEARCH PROJECT**
APPENDIX C: **CONSENT FOR PARTICIPATION IN THE RESEARCH STUDY**
APPENDIX D: **EVIDENCE OF PERMISSION FROM HEAD OF THE DEPARTMENT OF HEALTH TO EXECUTE THE STUDY**
APPENDIX E: **EVIDENCE OF THE APPROVAL GRANTED BY THE PRINCIPAL OF THE FREE STATE COLLEGE OF EMERGENCY CARE TO EXECUTE THE STUDY**
APPENDIX F: **EVIDENCE OF THE FACULTY OF HEALTH SCIENCES RESEARCH ETHICS COMMITTEE GRANTING PERMISSION TO EXECUTE THE STUDY**

LIST OF FIGURES

FIGURE 2.1: FREE STATE PROVINCE 6
FIGURE 4.1A: AGE OF PARTICIPANTS 28
FIGURE 4.1B: AGE OF BBA PARTICIPANTS 28
FIGURE 4.1C: AGE OF CONTROL PARTICIPANTS 28
FIGURE 4.2: MARITAL STATUS 29
FIGURE 4.3: ETHNICITY 29
FIGURE 4.4: LEVEL OF EDUCATION ATTAINED BY PARTICIPANTS 30
FIGURE 4.5: OCCUPATION 30
FIGURE 4.6: PARITY) 31
FIGURE 4.7: GRAVIDITY 32
FIGURE 4.8: GESTATION AT DELIVERY 32
FIGURE 4.9: NUMBER OF ANTENATAL CLINIC VISITS 33
FIGURE 4.10: ESCORTED TO THE HEALTH FACILITY 33
FIGURE 4.11: BIRTH ATTENDANT PRESENT 34
FIGURE 4.12: PLACE OF DELIVERY 34
FIGURE 4.13: MODE OF TRANSPORTATION 35
FIGURE 4.14: DELAYED CALLING DURING LABOUR PAINS 35
FIGURE 4.15A: TRANSPORTATION RESPONSE TIME OF AMBULANCE 36
FIGURE 4.15B: TRANSPORTATION RESPONSE TIME OF AMBULANCE 36
FIGURE 4.16: DISTANCE FROM HOME TO THE CLOSEST HEALTH FACILITY AVAILABLE 37
FIGURE 4.17: PLANNING AND PREPARATION 49
FIGURE 4.18: PREVENTION OF BBAS 49
FIGURE 4.19: USE OF TRADITIONAL MEDICINES 50

LIST OF TABLES

TABLE 4.1: ANTENATAL REASONS FOR BBAS 38
TABLE 4.2: PREPAREDNESS FOR DELIVERY 39
TABLE 4.3: EDUCATION (N=240).....41
TABLE 4.4: PERCEPTIONS LEADING TO BBAS 42
TABLE 4.5: SOCIO-ECONOMIC FACTORS 45
TABLE 4.6: MATERNAL OUTCOMES 46
TABLE 4.7: NEONATAL OUTCOMES.....47

LIST OF ACRONYMS AND ABBREVIATIONS

AFJEM	**African Journal of Emergency Medicine**
AM	**After midnight**
ANC	**Antenatal Clinic (Antenatal Care)**
BBA	**Born Before Arrival (Babies Born Before Arrival)**
BC	**Before Christ**
CARMMA	**Campaign for Accelerated Reduction of Maternal Mortality in Africa**
CS	**Caesarean Section**
CMJAH	**Charlotte Maxeke Johannesburg Academic Hospital**
EC	**Ethics Committee**
ECP	**Emergency Care Practitioner**
EMS	**Emergency Medical Services**
HAART	**Highly Active Anti-Retroviral Therapy**
HE	**Higher Education**
HEQC	**Higher Education Quality Committee**
HPCSA	**Health Professions Council of South Africa**
HRS	**Hours**
ICU	**Intensive Care Unit**
LBW	**Lower Birth Weight**
LMP	**Last Menstrual Period**
L/W	**Labour Ward**
MDGs	**Millennium Development Goals**
MIN	**Minutes**
NDH	**National District Hospital**
NICU	**Neonatal Intensive Care Unit**
NSH	**New Somerset Hospital**
NVD	**Normal Vaginal Delivery**
NVP	**Nevirapine**
PM	**Post Meridiem (After noon)**
PNMR	**Perinatal Mortality Rate**
PPH	**Postpartum Haemorrhage**
SA	**South Africa**
SDGs	**Sustainable Development Goals**
UN	**United Nations**
WHO	**World Health Organization**

SELECTED DEFINITIONS AND TERMS

Born before arrival (BBA) – as explained by Parag, McKerrow and Naby (2014) it refers to childbirth which occurs without a skilled birth attendant and that occurs either at home or en route to a delivery centre or health facility (hospital). It is assumed that such deliveries happen elsewhere due to delays in seeking or accessing health facility care.

A skilled birth attendant – Parag et al. (2014) define this person as an accredited health professional – such as a midwife, doctor or nurse – who has been trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns. To this definition, the researcher adds emergency medical care (EMS) personnel, as they also undergo training on the progress of normal pregnancy, the management of normal (uncomplicated) pregnancies, deliveries and Kangaroo Mother Care (KMC) from a basic ambulance assistant level of EMS.

Health Facility – refers to an accredited delivery centre, clinic, hospital or maternity unit.

SUMMARY

The purpose of this study was to investigate the causes of births before arrival (BBAs) in order to identify the target groups for educational outreach programmes to reduce the number of births before arrival (BBAs) at the health facilities in the Mangaung area.

The researcher purported to establish the following:

i. Local causes or contributing factors leading to BBAs in the Mangaung area.

ii. *Recommendations for the educational outreach for target groups to reduce BBAs and hopefully prevent unnecessary loss of life.*

The following causes were distinct: There was a great delay in calling for transportation from the time labour pains started. Some of the BBA participants were found to have had a precipitous labour and as a result they had a much shorter labour period. BBA participants lacked knowledge and insight about pregnancy/labour, signs and symptoms of the onset of labour as well as its complications and others did not know their gestation period. Delayed ambulance transportation led to births occurring before arrival at the health facility.

The target groups for the educational outreach on BBAs in Mangaung were established as the following: The ambulance personnel including the dispatch or call centre team (to address call priorities); the antenatal health care personnel (so as to educate pregnant mothers continuously during the ANC visits); and the pregnant mother or patient (including women in child bearing age, those who wish to get pregnant and their support structures).

The following were established as common outcomes of BBAs in Mangaung: there were more pre-term births from the BBA participants; and BBA participants had more adverse outcomes, like hypotension, uterine inversion, or placental retention.

The second objective concerned establishing the contributing factors leading to mothers ending up with BBAs in the Mangaung area. These were found to be multiparity, distance from the healthcare facility (to reach it in time to deliver the baby in this safe environment), the mother's level of education, whether the mother had attended antenatal clinic; the level of social support which the mother experienced; and her preparation for labour. The objective of the study was to identify the target groups for the educational outreach to reduce BBAs in Mangaung. The study confirmed that BBAs are at high risk of continuously occurring if education is not addressed and mitigating strategies are not put in place to address the problem. Recommendations on these steps are offered to address the problem of education of the target groups.

CHAPTER 1

ORIENTATION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

In this study, an in-depth research assessment was conducted with a view to identify the target groups for the educational outreach to reduce the number of births before arrival (BBAs) at the health facilities in Mangaung.

Pre-hospital emergency care personnel, well known as Emergency Medical Services (EMS) personnel, provide emergency medical care and transportation of ill and injured patients (including pregnant mothers) to hospital. As an Emergency Care Practitioner (ECP), the researcher would arrive at these pregnant mothers' homes and find them already in labour and would have to deliver babies at patients' homes or in the back of an ambulance on the way to hospital or the maternity clinic. Some of these BBAs tend to have adverse neonatal and maternal outcomes.

It appears that BBAs come a long away and dates as far back as the time of the birth of Moses around 1398 BC as recorded in the Bible (2001) in the book of Exodus 1:19 which says "The midwives answered Pharaoh, 'Hebrew women are not like Egyptian women; they are vigorous and give birth before the midwives arrive.'" That is saying babies were born before arrival, in this case referring to the arrival of a midwife.

Alabi, O'Mahony, Wright and Ntsaba (2015:1) in their study "Why are babies born before arrival at the health facilities in King Sabata Dalindyebo Local Municipality, Eastern Cape, South Africa? A qualitative study" indicated that the BBA rate in developed countries was less than 1% but in South Africa the rate was 10% BBAs and has been shown to have a high mortality and morbidity. This gave rise to the question what the reasons are that result in such a high number of BBAs. The fortunate part is that in the Mangaung area, there is a system in place for handling BBAs. The current arrangement is that all births before arrival (BBAs) at a health facility should be transported to National District Hospital (NDH) in Bloemfontein, provided that the mother and the baby are stable, while the unstable or high risk cases are transported to Pelonomi Regional Hospital.

Pattinson (2000:11) and Beeram, Solarin, Young and Abedin (1995) indicated that BBAs have a prevalence of 10% and a tenfold mortality rate. Maternal mortality in the Free State

according to Schoon (2013:534) ranks among the highest in South Africa. The purpose of this study was therefore to investigate the causes of births before arrival (BBAs) in order to identify the target groups for the educational outreach to reduce the number of BBAs at various health facilities in the Mangaung area. As the researcher is working in an environment that educates emergency care workers who are often the first point of contact of birth before arrival cases, there is a need to identify educational aspects that can be utilised in an attempt to help reduce the rate at which BBAs are occurring in the Mangaung area. The Mangaung area has a population of approximately 747 431 (Census, 2011) in comparison to that of the Free State Province in which it is situated, which as indicated by Statistics South Africa (2012), has a population of approximately 2 759 644. This population of Mangaung is serviced by approximately 6 to 8 ambulances per day and transportation of pregnant women could be a contributing factor to the rate at which BBAs occur.

1.2 PROBLEM STATEMENT

2015 was the year of tracking the progress of the Millennium Development Goals (MDG), which addresses matters that include BBAs. Millennium Development Goals 4 (MDG 4) and 5 (MDG 5) called for the reduction of child mortality by two-thirds and the reduction of maternal mortality by three quarters from 1990 levels by 2015 (*WHO*, 2005:16-17). Beeram *et al*. (1995:313) in their study at the District of Columbia General Hospital regarding the morbidity and mortality of infants born before arrival at hospital indicated that there is quite a substantial number of infants born at home, in an ambulance or car, for example. They concluded that morbidity had a twofold increase, while mortality had increased 11-fold in BBAs in comparison to those born in hospital.

As presented during the 2015 FS MDG Summit in preparation for the launch of the Sustainable Development Goals (SDGs), the infant mortality rate in the Free State was said to be high. The rate of BBAs in the Mangaung area had remained 10% of all the births in the last decade, which was regarded as unacceptably high as it often results in mortality and morbidity. Most of the BBAs in the Mangaung region are channelled to National District Hospital. The researcher planned to conduct an investigation at the National District Hospital maternity unit to investigate reasons leading to BBAs in an attempt to identify local causes of BBAs, which would then reveal more clearly the target groups for the educational outreach to reduce BBAs in the Mangaung area. By identifying local causes, the researcher would then be able to determine where the educational priorities should lie; whether the focus should be amongst the pre-hospital emergency care providers; other health care

workers, or in administration. This would also help the researcher to make recommendations on ways to reduce the risks of BBAs.

“Birth before arrival” assumes that the appropriate place for childbirth is in a health facility in accordance to the South African health policy. The concept was just the manifestation of the policy and sparked a robust debate on facility birth, which partially stems from the need to attain MDG 4 and 5. Knowing the causes of BBAs would be an important step in addressing the educational issues to reduce the BBA rate and thereby reduce mortality.

1.3 THE OVERALL GOAL OF THE STUDY

The overall goal of this study was to identify the target groups for the educational outreach to reduce BBAs in Mangaung, by enhancing knowledge regarding childbirth and the risks of BBAs.

1.4 THE AIM OF THE STUDY

The aim of this study was to investigate the local causes or contributing factors leading to BBAs in the Mangaung area to enable insight on identifying the target groups for the educational possibilities to reduce and/or prevent further unnecessary BBAs.

1.5 OBJECTIVES OF THE STUDY

The researcher would strive to establish the following objectives with this study:

i. *Identify local causes or contributing factors leading to BBAs in the Mangaung area.*
ii. *Identify the target groups for the educational outreach to reduce BBAs in the Mangaung area.*

1.6 RESEARCH DESIGN

The researcher would conduct a study over a period of six months in order to establish the local causes of BBAs. This should then enable the identification of target groups for the educational outreach to reduce births before arrival (BBAs) in the Mangaung area. According to Creswell (2003:18), research that utilises positivist claims to develop knowledge, using experiments or surveys for data collection with predetermined instruments (e.g. a data collection tool) to produce statistical data, is said to be using a

quantitative design. All births that occur outside of or before arriving at the health facility in the Mangaung area are transported to NDH with the assistance of EMS, including those who were privately transported. The researcher used a data collection tool for data collection with a number of open-ended questions. Therefore this was a quantitative study with qualitative elements.

1.7 CONCLUSION

Chapter 1 provided an overview and orientation to the study. This was achieved through providing the background to the research problem, while the overall goal and the aim of the study were also explained. The problem statement and the objectives of the study were presented. The research design and methodology used to conduct the investigation were also presented and explained.

In Chapter 2, births before arrival in the Mangaung area will be contextualised and the methodology used in this study will be explained.

CHAPTER 2

BIRTHS BEFORE ARRIVAL (BBAS) IN THE MANGAUNG AREA

2.1 INTRODUCTION

Chapter 1 presented an overview and orientation to the study. This was achieved through providing the background to the research problem, where after the overall goal and the aim of the study were explained. The problem statement and the objectives of the study were presented. The research design and methodology used to conduct the investigation were also presented and explained.

This chapter looks at the perspective gained from looking at various literature and documents on the context of births before arrival (BBAs) in the health facility. It provides a review of the literature to obtain a broad perspective of the causes of BBAs in order to identify where education should be focused to reduce the number of BBAs that occurs in the Mangaung area.

This chapter presents the literature review that was conducted in order to explore possible reasons in South Africa and internationally that result in such a high number of births occurring out-of-hospital, at home or *en route* to the health facility.

2.2 MANGAUNG

Mangaung is one of the five districts in the Free State province of South Africa. It is a metropolitan municipality, which comprises of Bloemfontein and the surrounding towns. It has a population of approximately 747 431 (Census, 2011) in comparison to that of the Free State province in which it is situated which is indicated by Statistics South Africa (2012) as having a population of approximately 2 759 644.

Figure 2.1 below was obtained from Google images and it shows the Free State province with its five districts, one of which is Mangaung and where it is located compared to the other districts.

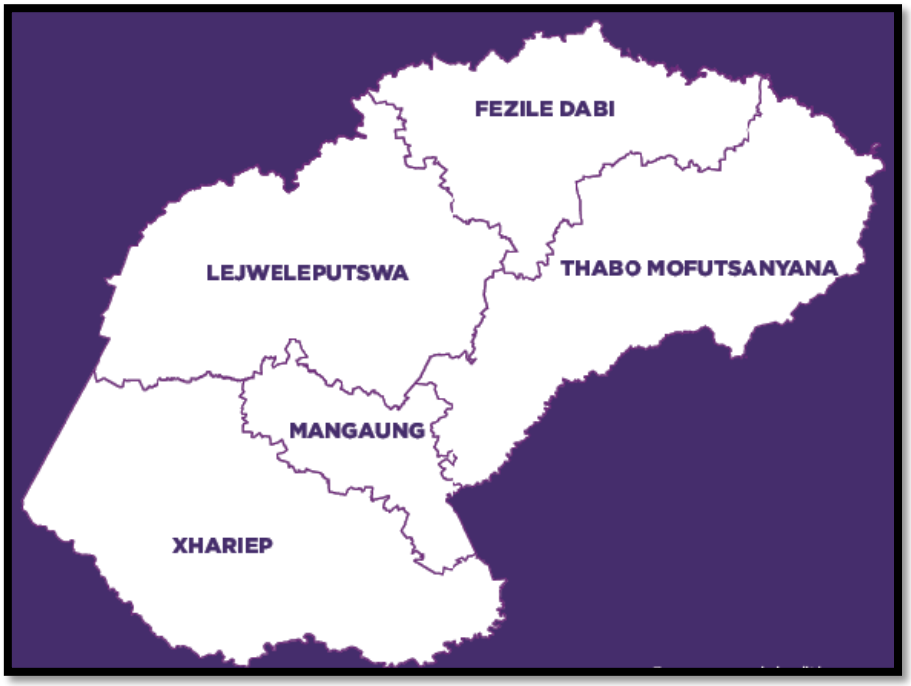

Figure 2.1: Free State Province

2.3 POSSIBLE CAUSES OF BIRTHS BEFORE ARRIVAL

BBAs were explored by Chaudhary (2005:115) in his study focusing on accidental out-of-hospital deliveries. He says that women can plan to have their babies delivered at home and refers to those as planned home deliveries. However, he explains BBAs as accidental out-of-hospital deliveries or births that were unplanned and happened at home or *en route* to the health facility when women enter the active stage of labour very quickly.

Scott (2005) also adds that BBAs are unplanned events. He indicated that BBAs occur when a mother had intended to have her baby delivered in a health facility, but for some or other reason the baby is born before the mother arrives at the health facility. These deliveries generally occur either at home or on the way to the clinic or health facility, and there would be little or no medical or midwifery assistance. Births before arrival at the health facility globally remain a significant problem, affecting 2.4% of deliveries in the Bisha region of Saudi Arabia (Bahrain, 1995). According to Parag, McKerrow and Naby (2013) and Bhat, Suri and Gupta (2000:483) BBAs create an exceptional group.

Parag, McKerrow & Naby (2014) estimate that over 90% of births in SA occur within the health facility under the supervision of a skilled health professional. Those that give birth outside the health facility fall into one of the following two groups: Planned home births in a location that has been prepared and in the presence of trained health professionals; and on

the other hand the unplanned deliveries without the attendance of a skilled health professional. The latter group of BBAs is predominant in developing and less-developed countries, and creates a special group with regard to mortality and morbidity. There are certain rural areas that have a fine (or charge) in place for a mother that does not deliver in / at a supervised health facility such as Nkhoma Hospital in Malawi and certain districts in Limpopo as stated by Parag, McKerrow & Naby (2014). The major neonatal morbidity and mortality that are related to BBAs were hypothermia, hypoglycaemia, and lower birth weight, as well as neonatal sepsis with a greater probability of the baby being admitted to an intensive care unit (ICU). Al-Amoudi and Bahnassy (1995:1) indicated that women who delivered before arrival were likely to be older and of high parity.

As observed in a previous study by Parag *et al.* (2014), the majority of babies in the BBA group had a multiparous mother, and women of higher parity are more inclined to deliver before arrival at a clinic or health facility due to the shorter duration of the second stage of labour and higher incidence of pre-labour spontaneous rupture of membranes. Parag *et al.* (2014) also indicated that their observations from previous studies indicate that women who delivered before arrival at health facilities were unbooked and of greater parity. Significantly fewer mothers who had BBAs attended antenatal clinics, and this is possibly associated with greater risks as the opportunities for health education and early detection of complications are lost. These could also be contributing factors or reasons for the higher stillbirth rate seen in the BBAs.

According to Ramsewak, Narayansingh and Thomas (1997:241-244) there are clinical features that can help identify women at high risk of having a BBA which can help in its prevention. Their findings indicated that grand multiparity and a lack of antenatal care are strong determinants of BBA. Other findings included low birthweight, perinatal mortality, and parity, amongst others. Unterscheider, Ma'ayeh and Geary (2011:721-722) studied BBAs of parents in Ritunda Hospital, and the maternal risk factors that they identified were single, unbooked, primiparous women with unplanned pregnancies from disadvantaged socioeconomic groups or multigravidae who lived quite a long distance away from the health facility. Many of these were foreigners and had a poor knowledge of English and therefore, a poor understanding of the services available.

According to Unterscheider *et al.* (2011:721), Bhoopalam and Watkinson (1991) and Beeram *et al.* (1995), BBAs are at increased risk of adverse perinatal outcomes. In contrast to planned homebirths which are attended and conducted by a skilled midwife, when these

deliveries occur they are unsupervised as well as unplanned and can occur anywhere at home or *en route* to the hospital.

Chaudhary (2005:115-122) examined factors influencing delay in arrival to the maternity hospital. He indicated that the bulk, about 85%, of deliveries in Nepal, occurred at home; of those, 55% of deliveries were conducted by untrained friends and relatives. In his hospital based cross-sectional descriptive study conducted at a Kathmandu maternity hospital over a 4-month period, he interviewed 37 women using a structured questionnaire to identify possible causes of BBAs and concluded that there were various factors that were responsible for the delay in arrival to the health facility.

Some of the factors that were explored in the researcher's study include socio-demographic variables, maternal factors, transportation, antenatal factors, preparedness, education, perceptions leading to BBAs, socio-economic factors, adverse maternal outcomes, as well as outcomes of the newborn.

2.3.1 Socio-demographic variables

The socio-demographic variables include age, marital status, ethnicity, occupation and the level of education obtained. Lazić and Takač (2010:11-14) in their study based on data from the medical records on "safety of unplanned home birth" found that 55.2% of mothers who gave birth at home or on the way to hospital were without higher education and 87.4% of the mothers who gave birth in hospital had a level of higher education.
In their study there was a higher perinatal morbidity for unplanned home deliveries compared to hospital deliveries. They found that the factors that made unplanned home deliveries before arrival at the health facility more common were high parity, marital status, absence, or insufficiency of antenatal care, and lower education. They recommended that additional effort should be made to improve antenatal care. Also, social vulnerabilities should be identified that would possibly assist to decrease the number of unplanned deliveries and thus improve the perinatal outcomes.

2.3.2 Maternal factors

Maternal factors contributing to the prevalence of BBAs include low maternal age, high parity, and low education level, poor access to transport and healthcare, and poor antenatal attendance. In addition to these, poverty, a rural lifestyle, as well as unwanted and teenage pregnancies are all expected to contribute to the prevalence of BBAs in SA according to

Parag, McKerrow & Naby (2014). According to Lazić and Takač (2010:11-14) factors that made unplanned home deliveries before arrival at the health facility more common were high parity, as well as absence or insufficiency of antenatal care.

As stated by Bassingthwaighte and Ballot (2013) and Scott (2005), BBAs constitute a high-risk newborn population group and have an increased perinatal mortality and morbidity. Al-Amoudi and Bahnassy (1995) revealed in their research findings that complications occurred among those mothers who had delivered before arrival at the health facility. As a result, this contributed to the incidence of morbidity being more significant: 18.6% of the BBA mothers had a retained placenta, and 11.6% were in shock upon admission. The most common complication among the BBA babies, according to Scott (2005) was neonatal hypothermia.

BBAs have a high neonatal mortality rate in South Africa (SA), although the occurrence of BBAs has been shown to be equivalent to that of other developing countries. BBAs have been associated with poor antenatal clinic (ANC) attendance, prematurity, delay in appearance to the health facility and a significantly increased length of admissions to the hospital. These risk factors as a result have implications on the pre-hospital care of the newborn and on the access to maternal and child healthcare in general (Parag *et al.*, 2013). Chiragdin (2013) noted that a short duration of labour was also one of the predisposing factors.

Bhat, Suri, and Gupta (2000) and Bassingthwaighte and Ballot (2013) state that BBAs form a high-risk group of the newborn population. They also note that research studies have clearly demonstrated that BBAs have a significantly higher perinatal mortality and morbidity. Bassingthwaighte and Ballot (2013) in their study on BBAs presenting to Charlotte Maxeke Johannesburg Academic Hospital (CMJAH), South Africa, further discovered that mothers who delivered at home or out of the health facility had higher possibilities of being multiparous and unbooked and those patients also had unknown HIV, syphilis and Rhesus results. The discovery made by Scott (2005) is that other probable causes of BBAs are a combination where the mothers did not attend the antenatal clinic, and are thus unbooked and have received no prenatal care and this mostly occurs when the pregnancy is concealed. The presence or absence of birth attendants have not been investigated in these situations, or how rapidly healthcare personnel attended to these unforeseen deliveries, as this may also have an important effect on the outcome.

In their review of studies that were conducted in the United States of America, the United Kingdom and Europe, Parag *et al.* (2014) explored the management of the emergency medical services (EMS) at BBAs and discovered that regardless of gestational age, the most recurrent neonatal complication was hypothermia; additionally; temperature for babies had been poorly documented in that study. They also mentioned that standard clinical practice at the health facility includes routine temperature measurement for babies that were born well in the health facility, but it was mandatory that all BBAs have their temperature and glucose analysis done on arrival at the health facility. As a result, when they compared the incidence of BBAs in their study with global figures from other developing countries, similar risk factors were discovered which included poor antenatal attendance, prematurity and a delay in presentation to the health facility. These aspects are also known to have implications for the pre-hospital care of the newborns, and access to maternal and child healthcare in general.

Their study identified a failure of clinicians to expect complications that are related to BBAs and to initiate appropriate clinical management, in particular looking at the very poor documentation of two of the most vital clinical observations that are used to identify critically ill patients: temperature and glucose readings. Their finding in particular had implications for the clinical training of healthcare professionals and the need for education on the acute assessment of BBAs, both in the pre-hospital environment and upon arrival at the health facility. Many women continue to give birth at home or outside health facilities in the absence of a skilled health professional and this poses the risk of severe complications and even death.

Parag *et al.* (2014) further indicated in a study in KZN that the government had intended to increase the number of deliveries that occur in health facilities from 28% in 2007 to 50% in 2015 for rural areas and those of urban areas from 79% to 90%. Intra-partum strategies of health facilities that have a skilled birth attendant (a skilled attendant and an environment providing emergency obstetric care services) and with an efficient referral system of pregnancy and childbirth complications have been shown to be the most effective to address maternal and early neonatal mortality. They indicated that skilled birth attendance is very important because compilations may occur at delivery without any recognizable risk factors during the antenatal period, and the reaction to those complication has to be appropriate.

Parag *et al.* (2014) states that the Zambian health policy strongly encourages pregnant women to try to find skilled birth attendance by having health facility childbirths in order to

have appropriate management of complications at birth. The World Health Organisation (WHO) [2005:16-17] indicates Millennium Development Goals 4 (MDG 4) and 5 (MDG 5) calls for the reduction of child mortality by two-thirds and the reduction of maternal mortality by three quarters from 1990 levels by 2015 respectively. As discussed above, BBAs constitute a high risk for both maternal and newborn health, as complications can occur. This matter has become an international commitment identified by the United Nations (UN) as an urgent public health priority that needs to be addressed (Chiragdin, 2013).

According to Phiri, Fylkesnes, Ruano and Moland (2014) maternal mortality remains high in sub-Saharan Africa. Health facility intra-partum approaches or strategies with skilled, well-trained birth attendants have been shown to be most effective to address intrapartum maternal mortality. The health policy in Zambia prefers that pregnant women should have facility childbirths; however, less than half of the women are utilising the delivery facilities. This led to a qualitative study being conducted in Kapiri Mposhi, Zambia, using focus group discussions with antenatal clinic and outpatient department attendees, mothers of BBAs, their husbands, midwives, traditional birth attendants, as well as community leaders. The following were the results of their study: The views of users and providers were grouped under themes that comprised of experiences associated with promotion of facility childbirth, responsiveness of health providers, and giving birth at home. In the case where individuals sort facility childbirth it was found that trust and quality of care were important, poor attitudes of health care providers, long distances that pregnant mothers have to travel to get to the health facility and lack of transport to health facilities, the costs to buy supplies for delivery, cultural ideals that local herbs speed up labour and that women are expected to exhibit endurance at childbirth, all these factors discouraged facility childbirth.

It was discovered that trust and the quality of care that patients received were important and the lack of these two factors discouraged them from seeking health care at childbirth.

Phiri *et al.* (2014) state that

> *"…the global burden of maternal mortality remains high with 287,000 women reported to have died from pregnancy-related complications in 2010. Maternal mortality is highest in sub-Saharan Africa and South-East Asia, which together account for 85% of the global burden. To reduce this burden the Millennium Development Goal 5 (MDG 5) aims to achieve a 75% reduction in maternal mortality ratio from 1990 to 2015".*

The development has been slow in sub-Saharan Africa, despite crusades such as the Campaign for Accelerated Reduction of Maternal Mortality in Africa (CARMMA), whose purpose is to promote maternal, newborn and child health. Phiri *et al.* (2014) stated that in

Zambia the national health strategic plan targeted to reduce maternal mortality ratio from the current 591 per 100,000 to 159 per 100,000 live births by 2015.

Fajemilehin (1991:13) in his study at the Baptism Hospital in Nigeria found that just about 65% of mothers who had delivered outside of the health facility were assisted only by a traditional birth attendant, and 73.7% of them had to seek professional assistance due to complications of delivery.

2.3.3 Transportation

A study that was conducted on the accidental home deliveries in southern São Paulo, Brazil by De Almeida, Alencar, Novaes, Franca, Siqueira, Schoeps, Campbell and Rodrigues (2005:367) revealed that mothers reported that the lack of available transportation to the health facility was one of the reasons for home delivery. They also indicated that the health services failed to identify women in labour, and that together with the non-availability of emergency care were seen as the contributing factors to accidental home deliveries or BBAs.

As reported in the report on EMS in the Eastern Cape by Treatment Action Campaign (TAC) and Section 27 catalyst for social justice (2015:25) South Africa has similar and even worse situations as there are areas where its EMS is inaccessible due to terrain and rural or farm areas that are not on the map or where there are no proper roads and as a result causing delays for ambulances to respond on time.

2.3.4 Antenatal factors

According to Pilkington *et al*. (2014:904 - 908) there are specific features in childbirth which highlight the importance of the geographical or physical accessibility of health services for deliveries planned to occur in hospital and at home. The onset of labour is unpredictable and can also progress very quickly, leading to the unexpected delivery occurring at home or *en route* to the health facility. They refer to such occurrences as accidental out-of-hospital births, and have discovered that these often occur without any medical assistance and commonly before term. As a result, they lead to a higher risk of neonatal mortality. The perinatal mortality in Finland was found to be 2.5 times higher for babies born before arrival at the health facility than for babies born in a health facility. The accessibility of maternity units was found to be essential for planned home births so as to ensure timely emergency

transfer for complications that might occur during labour or delivery. These transfers occurred in 15%-30% of cases.

In 1981, there were 1128 maternity units in France. Subsequently there was a dramatic decrease in maternity units to 816 in 1995, and 585 in 2006. Research studies were conducted in 2004 and 2008 respectively to evaluate the impact that the closures of those maternity units had on the women's choices of maternity unit as well as the distance that women had to travel in order to deliver. However, no studies focused on difficulties women faced in reaching the maternity units or on out-of-hospital deliveries. The main objectives were to calculate the prevalence of out-of-hospital births and to decide whether this incidence differed in relation to distance to the closest maternity unit and as compared to the recent closures of maternity units. There was a secondary objective as well, which assessed whether there were any specific socio-demographic groups of women that were more susceptible or vulnerable to the effects of distance and that were at a greater risk of an out-of-hospital delivery. Their findings indicated that long distances that the mothers had to travel did have a negative impact on the risk of death after BBA.

As mentioned in the TAC and Section 27 report on EMS in the Eastern Cape (2015:25) the antenatal care given to pregnant women to assist them to have a safe pregnancy as well as a healthy baby is affected by inaccessibility of ambulances and mobile clinics to areas where there are no proper roads, and health facilities are located very far as a result these mothers end up not being able to get check out for complications of factors that can affect their pregnancy negatively.

To mitigate possible negative consequences as result of the long distances travelled to health facilities and access of ambulances to certain areas Pilkington *et al*. (2014:907) recommended early hospitalization.

2.3.5 Preparedness

McLelland, McKenna and Archer (2013:20) indicated that unplanned BBAs are not an unpredictable freak occurrence but an event that should be anticipated that requires the implementation of educational and policy strategies to help minimise any associated risk.

They defined a BBA as the "unpredicted birth of a baby in an unplanned location or without an experienced attendant or both". They recommend that predisposing risk factors in

pregnancy have to be recognised in order to assist in identifying those women who are more at risk. Taking this step will permit the execution of a plan for the birth.

Chaudhary (2005:115) indicated that the place where one wishes to deliver had to be planned in advance while attending antenatal visits. He found that only about 11% of pregnant women had regular antenatal care visits and that there was a lack of preparedness as well as inadequate counselling during the period when pregnant women were attending their antenatal care (ANC) visits at the health facilities. These factors contributed directly to BBAs. He also discovered that many women did not discuss the place of delivery during the ANC, nor at home with their families. Some of the women had precipitate labour, while others were diagnosed with false labour pains and returned home, and as a result they later gave birth on their way to the hospital.

2.3.6 Education

According to Pilkington, Blondel, Drewniak and Zeitlin (2011:1170) the education of women is essential. Especially multipara women that live far from their maternity units have to be informed about the risks that are associated with accidental births out of hospital.

McLelland *et al.* (2013:24) indicate that paramedics should be recognised as the emergency maternity care providers for those women who find themselves in the situation of an unplanned BBA and thus should be provided with excellent educational support so they can best manage those mothers and babies.

2.3.7 Perceptions leading to BBA

Perceptions refer to how things are seen or viewed and thus have to do with the opinion of others in an attempt to hear their thoughts on what they might have believed to be the leading factors causing BBAs.

2.3.8 Socio-economic factors

Gunnarsson, Smarason, Skogvoll and Fasting (2014:1003) looked at the prevalence, maternal characteristics and the effects of unplanned out-of-institution births in Norway. They indicated that there had been a movement in many countries towards the centralisation of births to fewer and larger units with the hope of getting more specialised care. However, this resulted in increasing the risk of unplanned out-of-hospital deliveries.

Gunnarsson *et al.* (2014:1004-1007) revealed that a high perinatal mortality was associated with unplanned out-of-hospital births. The causes were not well known, but they have seen that infants with low birth weight or low gestational age were more vulnerable. The main outcome measures were maternal risk factors related to unplanned births, the number of stillbirths and live births, living status at birth, and early neonatal and mortality rate.

Their research study that spanned approximately 15 years documented 6062 unplanned births with an average annual occurrence of 6.8/1000 births and that number had increased slightly, however, without any statistical difference. Their study revealed that high parity and younger maternal age were strongly associated with unplanned births. It was also shown that the unplanned birth group had a lower proportion of multiple births. The mothers of unplanned births were less likely to be married as well, and those living in the remote areas were more likely to have an unplanned birth. During the 15 years, the number of unplanned births did not decrease, even though there was a substantial decline for other births. They also found that there was a strong association of unplanned out-of-hospital births with higher mortality rates.

The above authors noted that unplanned out-of-hospital births in Norway were relatively common and occurred at 7/1000 deliveries. The number of unplanned births remained stable over the period of the study. However, an increase was identified in unplanned births that occurred at home and at unspecified areas. On the other hand, a decrease was noted in the number of births that occurred during transportation. Maternal risk factors included young age, multiple parity, and residence in rural areas.

Wagle, Sabroe and Nielsen (2004) set their objective to research whether socio-economic factors, distance to maternity hospital, ethnicity, type and size of family, obstetric history and antenatal care received in present pregnancy affected the choice between home and hospital delivery in a developing country.

Fajemilehin (1991:15) indicated that the majority of the BBAs came from rural areas and their mothers were illiterate. The TAC and Section 27 report on EMS in the Eastern Cape (2015:25) also shows that in South Africa rural area are affected by lack of access for ambulances to these areas.

2.3.9 Distance

Pilkington *et al.* (2011:1170) conducted a study that looked at how the supply of maternity units contributed and influenced the rate of out-of-hospital births using data that was

acquired from birth certificates. They discovered that during the period 2005-2006 there were about 4.3 per 1000 births that occurred out-of-hospital. They also found that for the women who resided 30 km or more the BBA rates were more than double and for women of high parity they were found to be even higher.

Wagle *et al.* (2004:1) found that a distance that was more than an hour away from the maternity hospital, low service score status, low education, multi-parity, and mothers who do not seek antenatal care while they are pregnant, were statistically and significantly associated with an increased risk of home delivery (or higher prevalence proportion of home deliveries).

A study done by Potter, Pelteret, Reynolds, Motala and Kibel (1984:380) found that the main factor that was responsible for the high BBA rate at the New Somerset Hospital in Green Point, Cape Town, was its relative inaccessibility to the patients who resided in the black peri-urban areas. They recommended the establishment of a midwife obstetric unit within easy access of these areas in order to remedy the situation, with an effective radio communication between the midwife and the referral hospital facility for better functionality.

Pilkington *et al*. (2011:1170) noted that many countries have a tendency to offer fewer maternity units, and births are also centralised in larger units. There are interconnected reasons that have led to this trend, such as medical safety, medical staff, financial pressures and the need to efficiently use equipment. The reduction in the number of maternity units lead to the loss of services in some of the areas and consequently also resulted in an increase in travel distances to the health facility for delivery. Many studies have discovered that long travel time or travel distance to the maternity unit, as well as poor access to obstetric care had a direct relation to the higher neonatal mortality and morbidity.

2.3.10 Adverse maternal outcomes

Lazić and Takač (2010:11-14) revealed in their study based on data from the medical records on “safety of unplanned home birth” that a birth that occurs in hospital is approximately seven times safer than an unplanned home delivery. This was their conclusion after comparing perinatal mortality, which was 68% for unplanned home deliveries: 13 (22%) versus 1399 (8%) for hospital deliveries. Unplanned deliveries which occurred at home and on the way to the health facility were more common in multiparous women (ratio of 4:1 compared to 1:1 for the hospital births).

2.3.11 Outcome of newborn

Lazić and Takač (2010: 12) noted that unplanned deliveries that occurred at home and on the way to the health facility were considered to be high-risk emergency deliveries. Infants born in these unplanned emergency settings were said to be at a higher risk of complications because of respiratory distress, hypoxia, prematurity, infection, acidosis and hypothermia.

Bassingthwaighte and Ballot (2013:139-144) explained that the Millenium Development Goal (MDG) four aimed at reducing the mortality rate of children under the age of five by two-thirds between the years 1990 and 2015. These authors indicated that South Africa was amongst the 15 countries failed to achieve the targeted reduction. The death of neonates accounted for 40% of mortality in children under five years of age. Half of these neonatal deaths occurred during the first 24 hours after birth and 75% happened during the first week. Preterm birth, severe infections and asphyxia were found to be the main causes of death.

They added that babies born before arrival (BBAs) constituted a high-risk newborn population. The literature also demonstrated that BBAs had an increased perinatal mortality and morbidity, a longer duration of hospital stay, and on average, lower birth weight and gestational age compared with hospital-born neonates. The research surrounding BBAs seems to conclude that this was a high-risk group. There is a need for more recent evidence from the developing world context. Recognising that neonates are at increased risk of morbidity and mortality is of particular importance, as resources and access to tertiary specialised neonatal services were limited.

As a result of their findings in Australia, McLelland *et al.* (2013:1-7) recommended that it is essential that EMS personnel be sufficiently educated, prepared and equipped to successfully manage BBAs. Due to a scarce exposure to childbirth in the first-world countries where health facilities are within close proximities, their EMS personnel are not as exposed to BBAs as it is the situation in Mangaung and that as a result impacts on their skills and knowledge retention: qualified EMS personnel require continuing professional development or educational programmes.

It was identified by McLelland, Morgans and McKenna (2013:1-7) in their review of articles in Victoria, Australia that EMS personnel attended between 28.2% and 91.5% of all BBAs and they discovered that the majority of the births they came across were regarded as

uncomplicated. However, all the EMS personnel in their study reported maternal or neonatal complications. They reported excessive postpartum haemorrhage in eight of the articles as being the most common maternal complication, and in nine articles the most recurrent neonatal complication that was reported was hypothermia, regardless of gestation.

Given the higher rate of perinatal mortality amongst BBAs as explained in the literature, it calls for continuous contextual adaptation to local circumstances. It also motivates for the training of EMS personnel and other health professionals in the management of deliveries and neonatal resuscitation and an urgent need for optimising mothers'/parental education and antenatal care in patients that seem to be the most vulnerable to experience poor obstetric outcomes.

2.4 CONCLUSION

Chapter 2 provided a literature study. The researcher looked at South African as well as international perspectives on the causes of births before arrival (BBAs) with the aim of finding the target groups to educate in order to reduce the causes of BBAs.

Chapter 3 presents a discussion of the aim and methodology of the research study.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

The previous chapter examined the perspective gained from various literature and documents on the context of BBAs.

Chapter 3 deals with the research design and methodology that was utilised in the study. It provides the theoretical perspectives on the research design and methodology.

Ethical approval for the study was obtained from the Free State Department of Health and Health Sciences Research Ethics Committee of the University of Free State in order to conduct the study at National District Hospital.

All babies born before arrival (BBAs) at a health facility within 24 hours of life were included in the study and compared with the next in-hospital normal vaginal delivery that occurred after the arrival of a BBA, using case-control sampling. All babies delivered by caesarean section (CS) were excluded.

3.2 THEORETICAL PERSPECTIVES ON THE RESEARCH DESIGN

The strategy of inquiry and types of design will be discussed.

3.2.1 Strategy of inquiry

According to Brink, van der Walt and Rensburg (2012:96) the research question informs the type of research design to be implemented. In this case, therefore, it thus had to do with the steps taken by the researcher to answer the research question. In this study the researcher had to identify the target groups for the educational outreach to reduce BBAs in the Mangaung area in order to inform the educational recommendations accordingly with the hope of preventing further unnecessary BBAs. As a result data were collected using case-control and quantitative study designs/methods by means of a data collection tool (cf. Appendix A).

Consistency was ensured by the researcher being the only one collecting the data by asking the participants questions using the data collection tool. The purpose of the study was explained in detail to the potential participants. Written informed consent was obtained prior to inclusion of the participant in the study. Participants were provided with a copy of their consent letter (cf. Appendix B).

3.2.2 Data collected

The data collection tool was prepared and followed to acquire information from the participants. The researcher will explain how the tool was used (cf. Appendix A).

3.2.3 Data analysis methods

The collected data was analysed using inferential statistics. This according to Brink *et al.* (2012:179) is used to infer from the data what the population might think or help make judgement of the probability that an observed difference between two groups is a dependable one (genuine difference) or one that might have happened by chance in this study. Inferential statistics make use of P-values – that is, the probability that the outcome is owing to chance – are used to communicate the significance or non-significance of the differences. In this current research inferential statistics facilitated the test of a hypothesis using a chi-square test.

The researcher also made use of descriptive statistics which according to Brink *et al.* (2012:179) is simply used to describe and summarise what's going on in the data or what informs the readers what the data sets look like. In this current study the researcher summarised in a frequency distribution and made a comparison concerning the frequencies of scores falling into certain specific categories. Making use of the ratios the researcher was then able to classify the responses to the open-ended questions. The researcher looked for similarities in the responses to each question and those were grouped together as Yes/No and counted together.

3.2.4 Participants

The research was conducted for a period of 6 months with participants whose babies were BBAs at National District Hospital only. The controls were taken from those who delivered vaginally subsequent to the arrival of the BBA in the health facility.

3.2.5 Possible reasons for BBAs

The following are possible reasons or contributing factors leading to BBAs as derived from various literature explored during this current Mangaung study:

3.2.5.1 *Socio-demographic variables*

The researcher recorded the following with regard to the patient: age, marital status, ethnicity, occupation and the level of education obtained. The level of completed education obtained was classified in the following manner: None, primary school (highest grade passed), secondary school (highest grade passed) and tertiary level qualification obtained (if any).

3.2.5.2 *Maternal related questions (after delivery)*

The parity, gravidity, gestation at delivery, number of antenatal clinic visits, when labour pains started, date and time of delivery and duration of labour were documented.

An attempt was made to establish who made the decision to seek medical assistance; whether the participant was escorted to hospital or not, and who was present at/attended the delivery.

The exact time when the labour pains started was obtained from the mother and recorded and the delivery time was obtained from the records or maternal case record book.

3.2.5.3 *Transportation*

Details were collected on which mode of transportation was used by the participant to reach the hospital, the time when transportation was called, when it arrived and when the participant arrived at the hospital. The duration it took the participant to arrive at the health facility was then computed for the different end points.

Distance from the participant's home to the health facility was also estimated and computed using Google maps.

3.2.5.4 *Antenatal*

It was assessed whether the participants had brought along a clinic book or card to serve as proof that they had attended ANC.

The participants were asked if they were aware that they were pregnant prior to delivery or the onset of labour.

The ANC card was checked to see if the facility for delivery as well as the level of care were clearly marked and whether the participant was aware of that information. It was also assessed to see if the participant was said to be high risk or not and whether the mode of delivery was also indicated. The participant was asked if she was aware of her onset of labour, and through history taking it was also assessed whether the labour was precipitous or not.

It was also assessed if the participant had bypassed the nearest maternity clinic and whether it was operational during the time of the onset of labour.

3.2.5.5 *Preparedness*

The participant was asked if she was aware as to whether she was pregnant or not. The participant was assessed for evidence of preparedness for delivery by looking for factors such as having packed the basic supplies (clothing, food, nappies, toiletries, medication, etc.) for the baby and herself.

3.2.5.6 *Education*

The level of the participant's insight and practice in preparing for the delivery event was assessed by asking various questions.

An assessment was made as to whether the participant was aware of the exact gestation age of her pregnancy or not.

The participant was asked to explain in her own words what she understood and knew about the signs of labour and if she was aware of the signs of labour. From her responses the researcher would then make an educated decision as to whether she knew the signs or not.

An assessment was made whether the participant had made preparations to overcome physical, cognitive, and resource constraints. The researcher would enquire if the ambulance had not arrived, would the participant have been able to get herself to the hospital or not, so as to determine whether or not the participant had constraints. The participant was also asked whether she had made preparations to have airtime available when necessary to make phone calls, to help determine whether in case of an emergency the participant would have been able to call for assistance.

An assessment was made by the researcher whether the participant understood the risks of preterm labour, BBA, complications of pregnancy and the importance of preparation. This was done through the researcher asking the participants to explain the risks of preterm labour (participants were asked how long should a woman be pregnant and what might go wrong if a pregnant women delivers the baby before the normal development period of baby has been reached). BBA (participants were asked what might go wrong if a pregnant woman delivers her baby before arriving at the hospital). Complications of pregnancy (participants were asked what conditions or problems that can occur during, after and because of pregnancy) and the importance of preparation (participants were asked whether it was important to be prepared for delivery and why). The researcher then made an educated decision based on the answers provided whether Yes/No sufficed for the response provided.

The following were further established from the participant:

- whether in her opinion antenatal preparation would help prevent a BBA (participants were asked to provide an opinion on whether going to regular clinic visits and having regular check-ups with a nurse or doctor would help prevent having a BBA);
- whether she was taught when to call for an ambulance (participants were asked if they know when to call for ambulance);
- and this was further probed by requesting the actual contact number of the Emergency Medical Services (EMS).

Through deductive reasoning the researcher determined whether or not the response provided warranted a Yes or a No.

3.2.5.7 *Perceptions leading to BBA*

All participants were asked on their opinion as to what they thought would be the main reason leading to BBA. The following factors were investigated or explored:

They were asked whether their previous delivery experience(s) at a maternity unit was not good; if they had planned to deliver the baby at the maternity unit; and whether they had ever been advised not to deliver at the maternity unit. Participants were also asked if they had ever delivered at home previously, and whether they feared to utilise health facilities.

Participants were also asked if they had left the move to the health facility for the delivery deliberately until it was too late; whether the attitude of the health facility staff contributed to their decision to deliver in or out of the health facility.

An inquiry was also made regarding the possibility of physical or verbal abuse being the reason for delaying departing to the health facility in preparation of labour.

Participants were asked if they had access to, or had made preparations to have access to a phone with airtime to call for help if necessary. The participants' opinions were asked as to whether the ambulance had delayed to arrive, if they thought that they would not receive anything for pain in the health facility and whether they believed in any form of traditional belief/consideration that lead them to think that a true woman has to endure pain.

An enquiry was also done to find out whether the participant was at any point sent home at a time when she thought she was in labour, or whether it was the financial costs preparing for the birth that were too high. The participants' opinions about the safety of the health facility were assessed, and whether the health facility appropriately considered the privacy and patient confidentiality.

3.2.5.8 *Socio-economic factors*

At delivery it would be determined whether the birth occurred on or preterm. The participant would be asked whether the pregnancy was planned or not mis-timed, unwanted or whether it was motivated by the social grant.

3.2.6 MATERNAL AND NEONATAL OUTCOMES

3.2.6.1 *Adverse maternal outcomes*

The participant was assessed for evidence of shock, obstetric tears, uterine atony, retained placenta, puerperal sepsis, and secondary post-partum haemorrhage having been present post-delivery.

3.2.6.2 *Interventions on the participant upon admission to hospital*

An assessment was done to check if the participant had received any of the following interventions such as blood transfusion, intravenous fluids, antibiotics, manual removal of the placenta, hysterectomy or had uterine tears repaired.

3.2.6.3 *Outcome of newborn (at the time of admission)*

The newborn was assessed whether he/she was alive, stillborn, died after delivery, what the birth weight (g) was and the APGAR score was assessed for all births that took place in the health facility (not obtained for BBAs). It was also noted whether the newborn was admitted in the NICU/Nursery; whether the birth was premature or not; if the baby had sepsis, hypoglycaemia, hypothermia and respiratory distress.

Open-ended questions were also utilised to allow participants to give their own opinion on matters that they would have liked to know concerning the planning and preparations before giving birth. The participants were also asked if there were ways that they thought would have been suitable to prevent or prepare them not to have a BBA. The participants were also asked if they had made use of, or would consider using traditional remedies to speed up the labour process.

Mothers of babies that were born before arrival (BBAs) at a health facility within 24 hours of life were chosen for the study, provided that the researcher arrived prior to them being discharged from the health facility. The researcher interviewed 120 BBA patients and compared each with the next in-hospital normal vaginal delivery that occurred after the arrival of a BBA.

The researcher had made arrangements with the nursing personnel at National District Hospital to be notified of the arrival of a baby that was born before arrival at the health facility. The researcher then travelled to the health facility to interview BBA participants immediately after the admission process has been finalised, provided that they granted informed consent to participate in the study.

The interviews were strictly done following the questions that were laid out in the data collection tool.

On some days there would be no BBAs, on other days the researcher would miss a BBA and on some days there would be more than one BBA.

On average, an interview with a participant took approximately 30-40 minutes.

Exclusion criterion: Patients who died post-delivery were not included in the study. BBAs that were transported to Pelonomi Regional Hospital and Mangaung University Community Partnership Project (MUCPP) Clinic were also not included in the study.

3.3 CONCLUSION

Chapter 3 provided an overview of the research methodology involved in the study and the procedures that were followed.

In Chapter 4, titled ***Results of the data collection tool***, the results will be reported.

CHAPTER 4

RESULTS FROM THE DATA COLLECTION TOOL

4.1 INTRODUCTION

Chapter 3 discussed the study design and methodology that were utilised to collect the data with a view to identify target groups for the educational outreach to reduce the number of births before arrival (BBAs) at the health facilities in the Mangaung area. This was achieved by discussing how the data collection tool would be utilised in the study.

In this chapter the results from the data collection tool will be presented by means of graphs and tables.

Even though, there is insufficient literature on BBAs in South Africa and specifically in the Free State, Beukes, Mabasa, Mkhongo, Olivier, Ramoo, Dawadi, and Joubert in 2014, have indicated that there were 306 babies that were born before the mothers arrived at National District Hospital (NDH) in Mangaung, Free State.

This study was conducted at NDH specifically, while Pelonomi Hospital and MUCPP Clinic were excluded. For the Period January to June 2016 Pelonomi Hospital had 16 BBAs and MUCPP Clinic had 53, while NDH had 166, the reason for conducting this study at NDH was thus verified.

4.2 PARTICIPANTS

This study consisted of 240 participants in total of which 120 were those who gave birth before arrival (BBAs) at a health facility, and the other 120 were control participants. The control participant was chosen and matched by approaching the next mother who gave birth vaginally in the hospital immediately after the arrival of a BBA.

4.2.1 Demography of participants

4.2.1.1 *Patients' Age (in Years)*

Figure 4.1a shows that 5.4% of all the participants were below the age of 19, 19.6% were between 19 and 22 years of age; the majority of the participants (33.8%) were between 23

and 28 years of age; 32.1% were between 29 and 35 years of age, and 9.2% were older than 35 years of age.

The mean age was 25 years for the control participants and 28 for the BBA participants, as shown in figures 4.1b and 4.1c. Literature states that “maternal factors contributing to the prevalence of BBAs include low maternal age”, however, in the current Mangaung study it was not the case. Most BBAs occurred in age groups above 22 years of age as a result the majority was in higher maternal age.

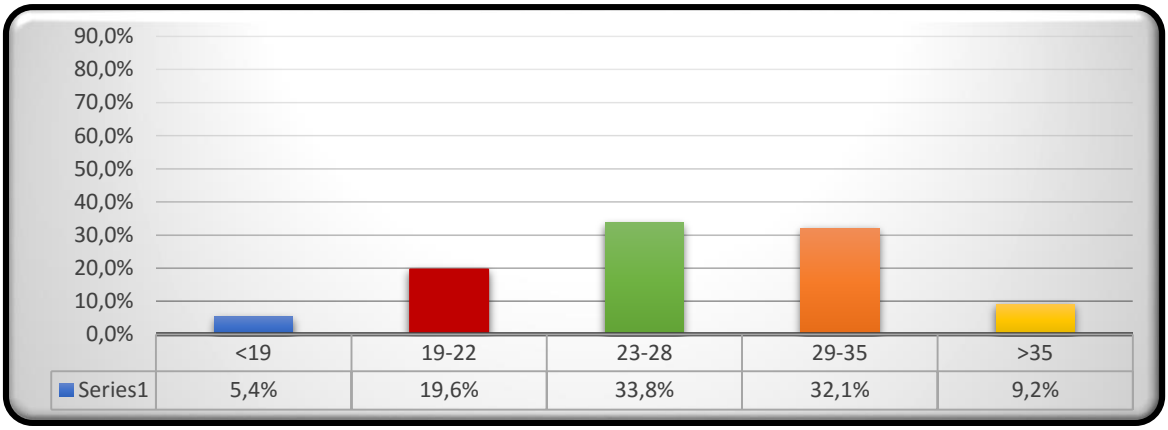

Figure 4.1a: Age of participants (n=240)

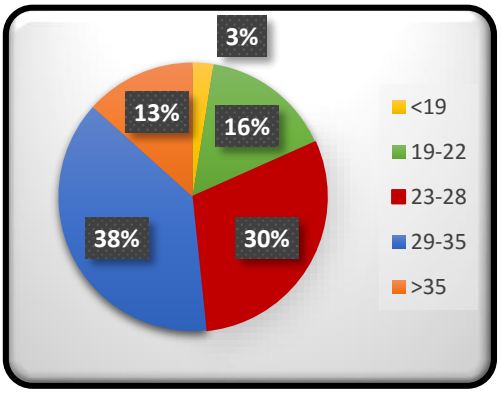

Figure 4.1b: Age of BBA participants (n= 120)

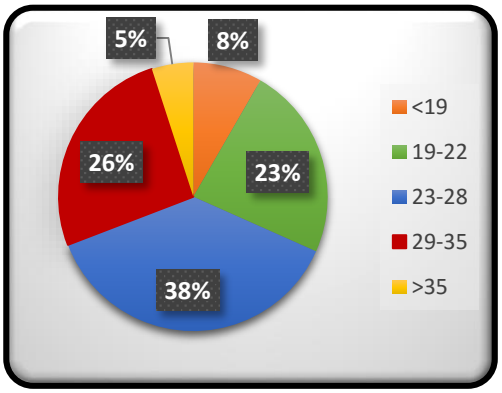

Figure 4.1c: Age of control participants (n=120)

4.2.1.2 *Marital Status*

Figure 4.2 shows that 82% of the total number of participants were found to be single. This high prevalence of single mothers is typical for the RSA situation. There was no significant difference in marital status between BBAs and in hospital deliveries.

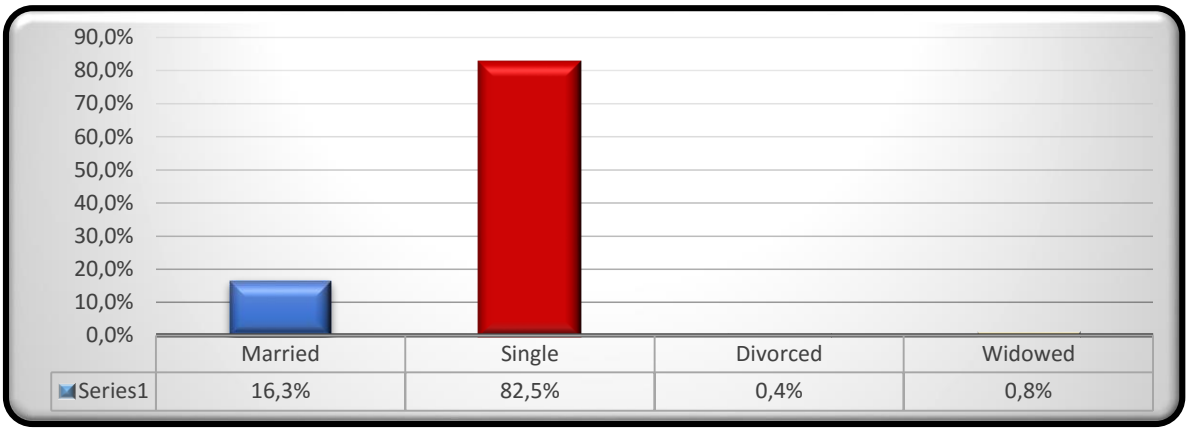

Figure 4.2: Marital status (n=240)

4.2.1.3 *Ethnicity*

Figure 4.3 shows that of the 240 participants, 86.3% were Black, 4.2% were Caucasians, 8.3% were Coloured, 0.4% were Indian and 0.8% were other. No significant ethnic difference between the participant groups was found.

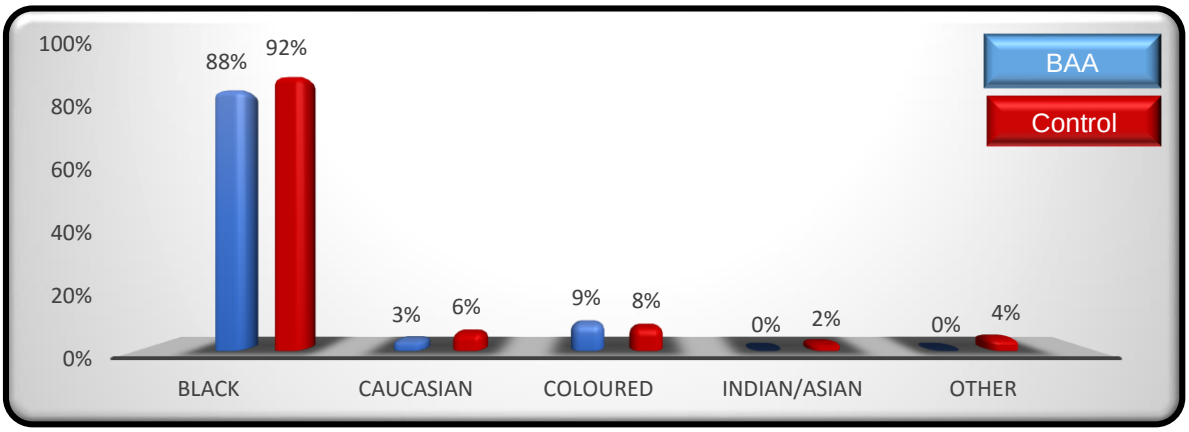

Figure 4.3: Ethnicity (n=240)

4.2.1.4 *Level of education*

Figure 4.4 shows that the participants from the control group were more educated than the BBA participants. As a result it can be deduced that mothers with a higher educational level were found to have delivered in the hospital.

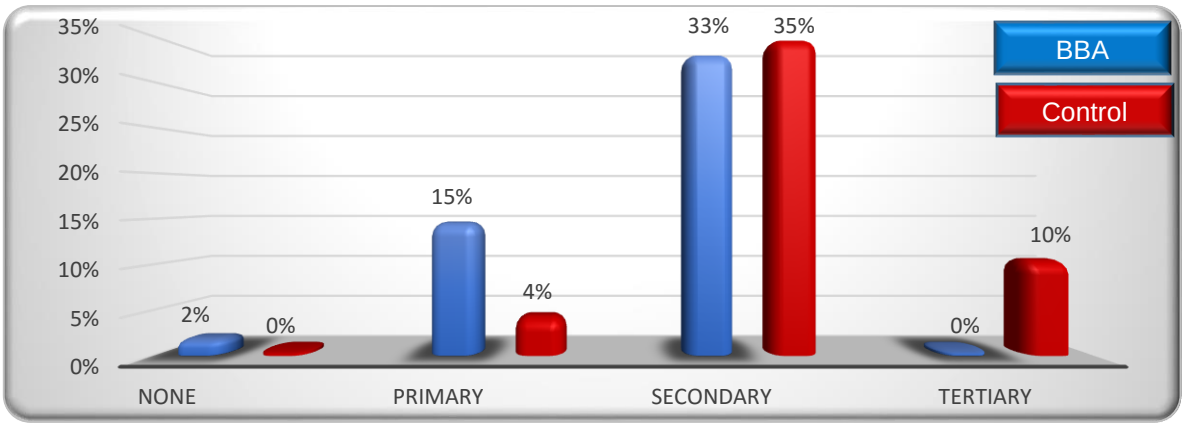

Figure 4.4: Level of education attained by participants (n=240)

4.2.1.5 *Occupation*

Figure 4.5 shows that 77.9% of all 240 participants were unemployed, 19.6% were employed and 2.5% were self-employed. There was no significant difference between BBA participants and the control participants with respect to occupation. Thus the figures suggest that occupation, specifically unemployment, is not associated with BBAs in Mangaung.

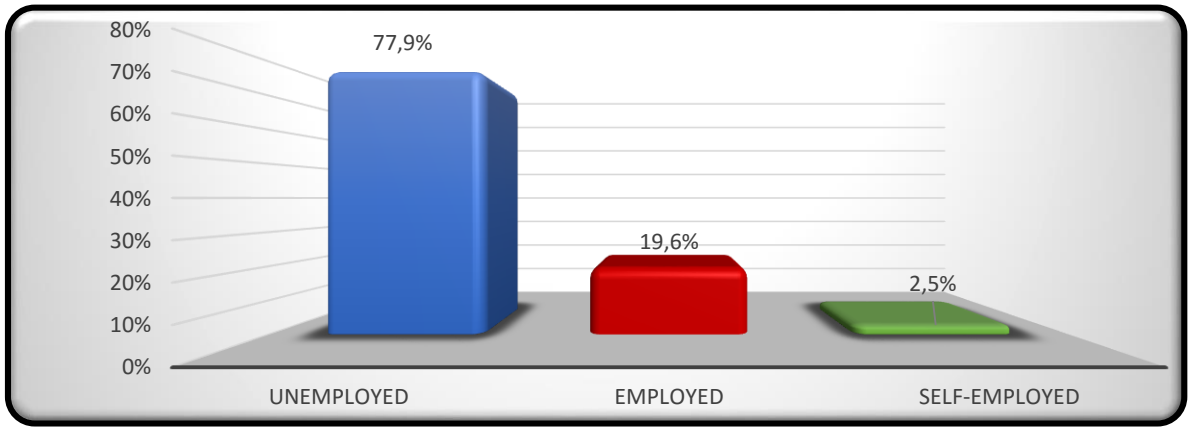

Figure 4.5: Occupation (n=240)

4.2.2 Maternal factors

4.2.2.1 *Parity*

The participants were asked as to how many times they have carried pregnancies to a viable gestational age or delivery, which included the current pregnancy post-delivery. Those who only had one child from the BBA participants were 4.1%, and from the control participants, they numbered 15.7%. BBA participants with two children were 13.2% while the control participants formed 18.6%. BBA participants with three children were 14.0%

while those from the control participants were 7.4%. Those with four children from the BBA participants were 9.9% while the control participants had 5.8%. Those with five children from the BBA participants were 3.7% while the control participants accounted for 1.7%. Those with six children from the BBA participants were 2.1% while there were none from the control participants (0%). Those with seven children from the BBA participants were 1.7% while the control participants had 0.4%. Those with eight children from the BBA participants were 0.8% while the control participants also had 0.8%.

It is thus clear that the BBA participants were more frequently multiparas than the control participants.

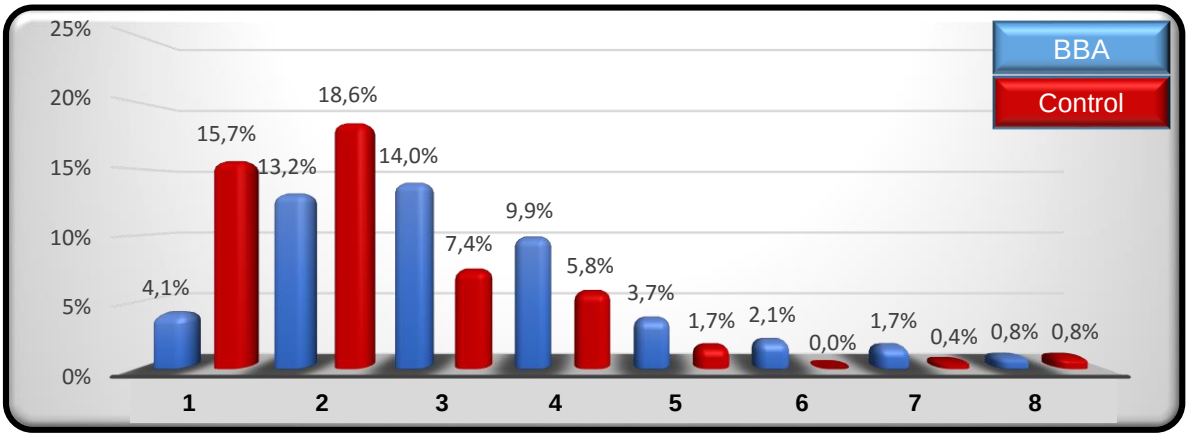

Figure 4.6: Parity (n=240)

4.2.2.2 *Gravidity*

The participants were asked as to how many times they have been pregnant which included the current pregnancy. Those who were only pregnant once from the BBA participants were 5.8%, and from the control participants were 17.5%. BBA participants who had been pregnant twice accounted for 15.0% while the control participants were 18.3%. BBA participants who had been pregnant thrice were 14.2% while the control participants were 7.9%. Those who had been pregnant four times from the BBA participants numbered 8.8% while the control participants numbered 4.6%. BBA participants who had been pregnant five times were 2.9% while the control participants accounted for 1.3%. Those who had been pregnant six times from the BBA participants were 2.5% while there were none from the control participants (0%). Those who had been pregnant seven times from the BBA participants were 0.8% while the control participants had 0.4%.

The findings of Ramsewak *et al.* (1997:241-244) indicated that grand multiparity (a woman that has given birth to five or more infants) was one of the strong determinants of BBA, and

the current Mangaung study had also proven that BBAs occurred more in women who were multiparas. This coincided with the findings of Al-Amoudi and Bahnassy (1995:1) that indicated that women who delivered before arrival were likely to be older and of high parity.

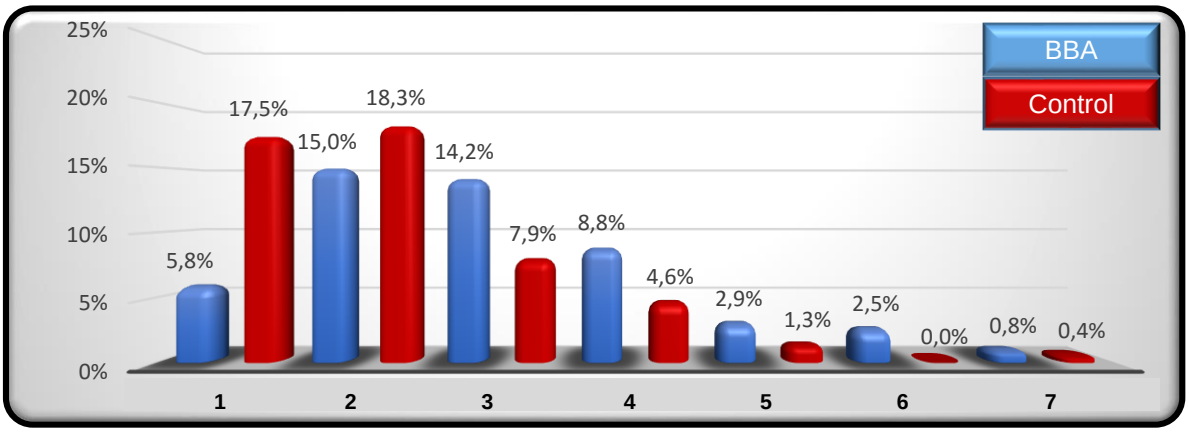

Figure 4.7: Gravidity (n=240)

4.2.2.3 *Being "booked"*

Figure 4.8 shows that there were more un-booked mothers in the BBA participants than in the control participants. With more BBA participants that delivered at a gestation period of less than 37 weeks, this indicates that BBA is associated with "unbooked" status and preterm births just as indicated by the literature.

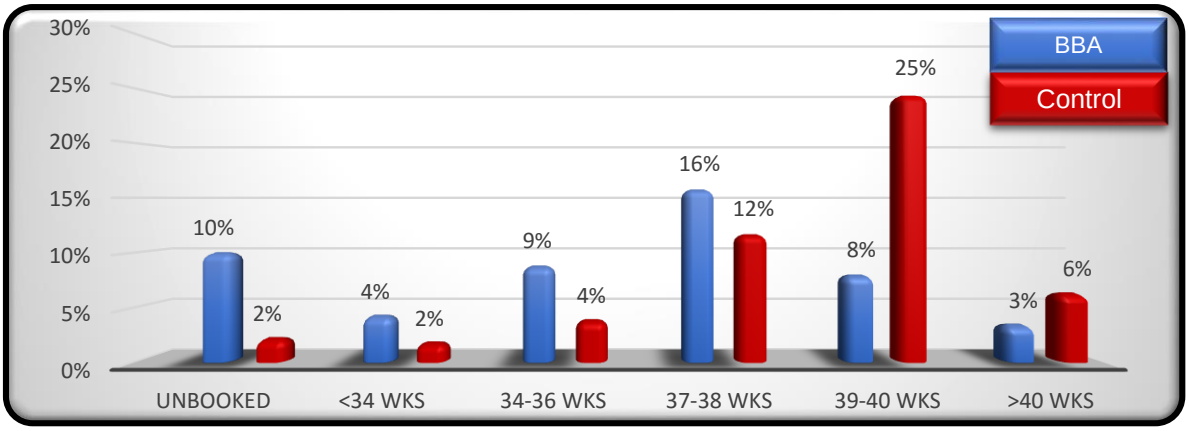

Figure 4.8: Gestation at delivery (n=240)

4.2.2.4 *Number of antenatal clinic visits*

Figure 4.9 shows that 10% of BBA mothers did not attend the antenatal clinic in comparison to only 2.5% from the control participants. Looking at those who attended the antenatal clinic there were very few of the BBA mothers who attended the regular check-ups to the end compared to the control participants.

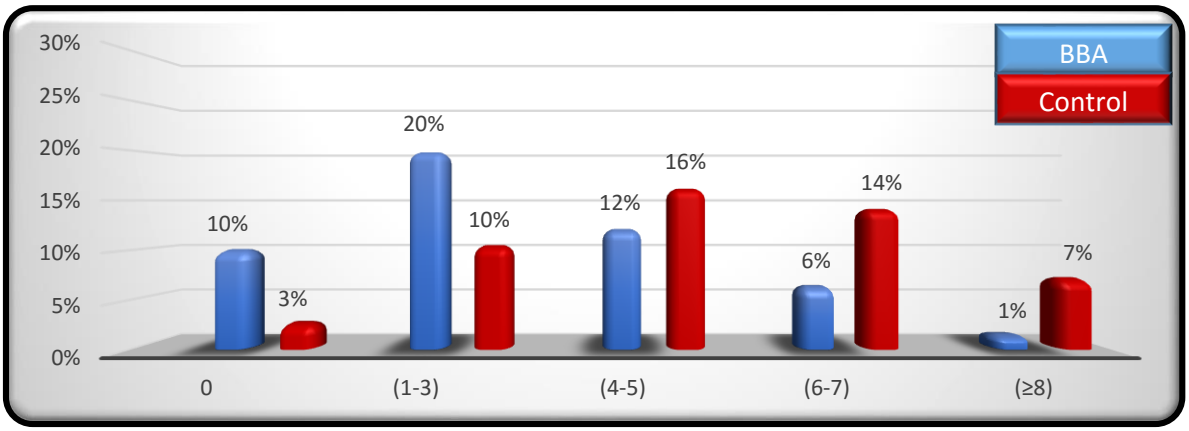

Figure 4.9: Number of antenatal clinic visits (n=240)

4.2.2.5 *Decision to seek medical assistance for the delivery*

Of all 240 participants, an overwhelming 98.8% claimed to have made the decision to seek medical assistance during labour. While the other 1.2% indicated that they did not seek medical assistance, and that decision was made for them by relatives, family, friends or neighbours.

4.2.2.6 *Medical assistance for the delivery was sought by whom*

Of all participants, 77.9% claimed to have sought medical assistance for delivery themselves. While the others had family, relatives, friends or neighbours assisting them.

4.2.2.7 *Escorted to health facility*

Figure 4.10 below shows that about 46% of BBA participants were not escorted to the health facility in comparison to the 33% from the control participants who were not accompanied by someone else to the health facility. This shows that BBA participants were mostly by themselves when labour started, while the control participants were not alone and had support.

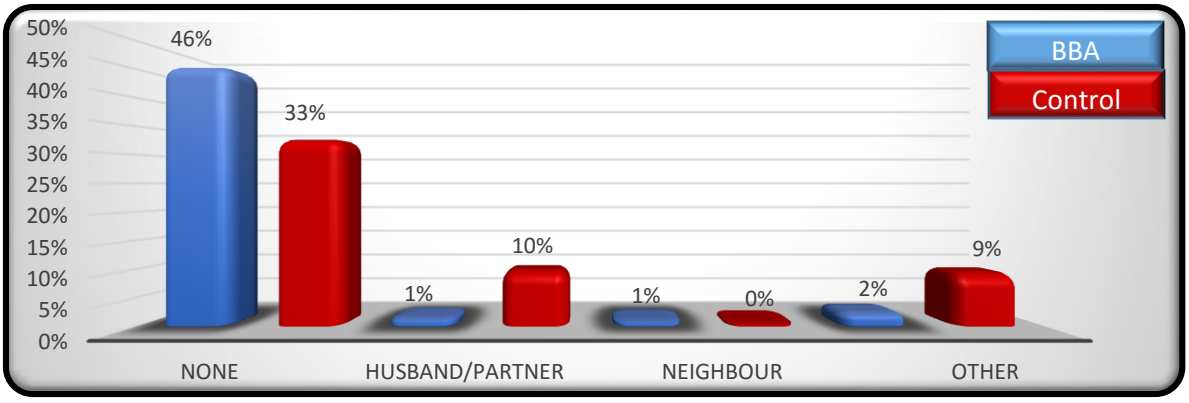

Figure 4.10: Escorted to the health facility (n=240)

4.2.2.8 *Presence of a birth attendant*

Figure 4.11 shows that only 32% of the BBA participants were attended to by a skilled health professional (which included EMS personnel, midwife or medical doctor). The rest either had a traditional carer, relative or neighbour assisting the mother with the delivery, or they were all on their own without any help.

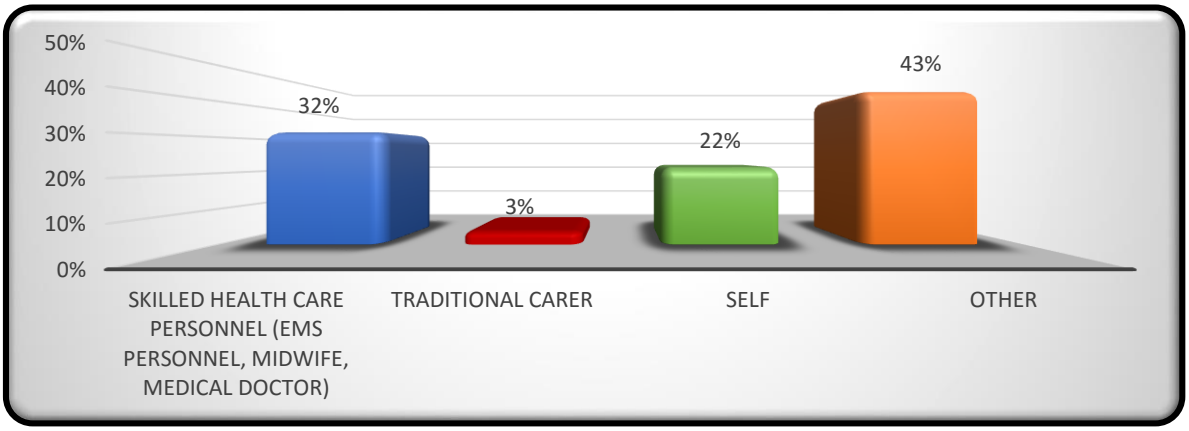

Figure 4.11: Birth attendant present (n=120)

4.2.2.9 *Place of delivery of the BBA participants*

Figure 4.12 shows that the majority of the BBA participants delivered at home (80%), roughly 17% delivered in the ambulance, 2% *en route* to the hospital in a private vehicle and 3% (other) delivered while walking around within the community and not at home. According to Bahrain (1995) births before arrival at the health facility globally remains a significant problem, affecting 2.4% of deliveries in the Bisha region of Saudi Arabia.

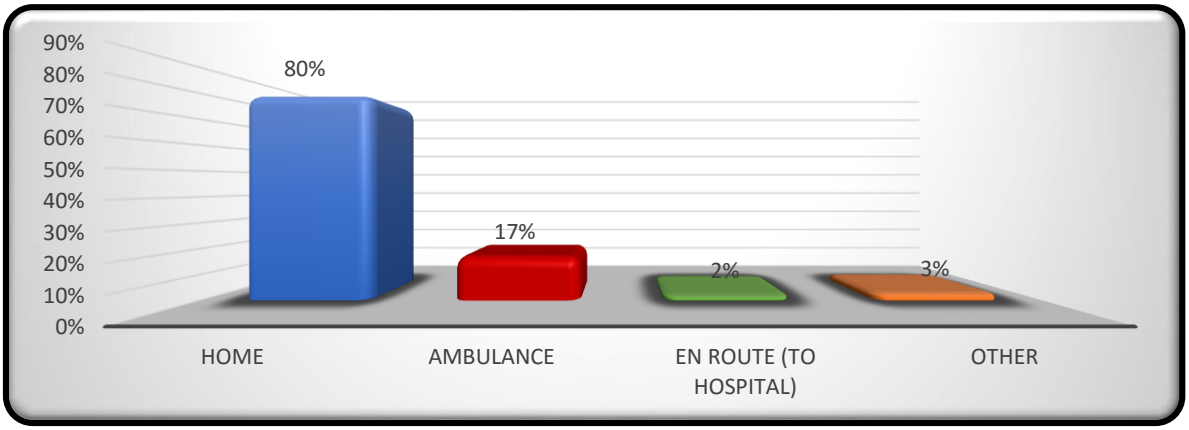

Figure 4.12: Place of delivery (n=120)

4.2.3 Transportation

4.2.3.1 *Mode of transportation*

The majority of all participants (75%) were transported by ambulance, 19.2% by private vehicles and 5.8% by public transport (bus, taxi, etc.). Figure 4.13 shows that only 25% made private arrangements for transportation while 75% were fully dependent on ambulances for their transportation. In general this implies that the pregnant population of Mangaung in the Free State depends heavily on the ambulance service when needing to be transported to the delivery facility in early labour.

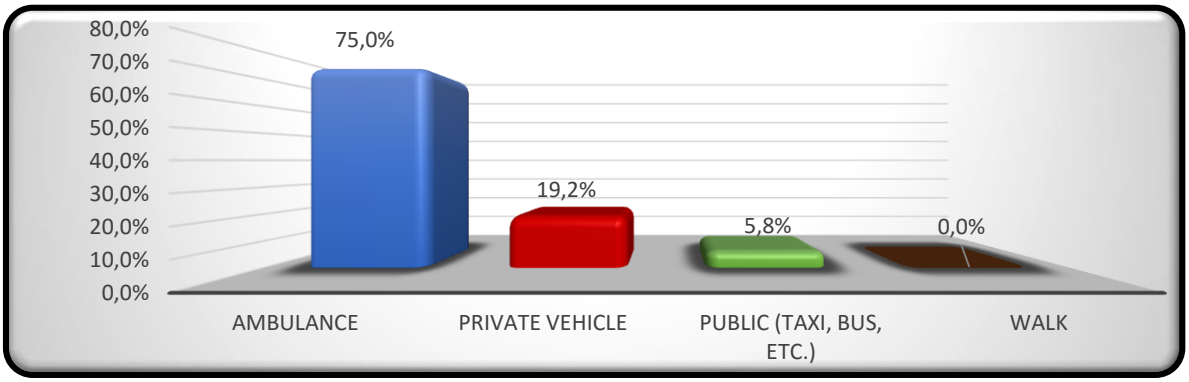

Figure 4.13: Mode of transportation (n=240)

4.2.3.2 *Timing of the call requesting transportation (hours)*

It was discovered that 1.3% of the participants did not have to call as they utilised their own transport; 3.8% did not remember at what time they made the call. 15.4% of participants called within 4 hours from the time they began experiencing labour pains and 24.2% called between 4-8 hours. The rest waited longer than eight hours before calling for transportation. This was found to be similar between both participant groups as indicated in Figure 4.14 below, showing an approximation of how long participants delayed to call for transportation from the time labour pains started. The conclusion is that most of the control participants called much earlier for transportation compared to the BBA participants.

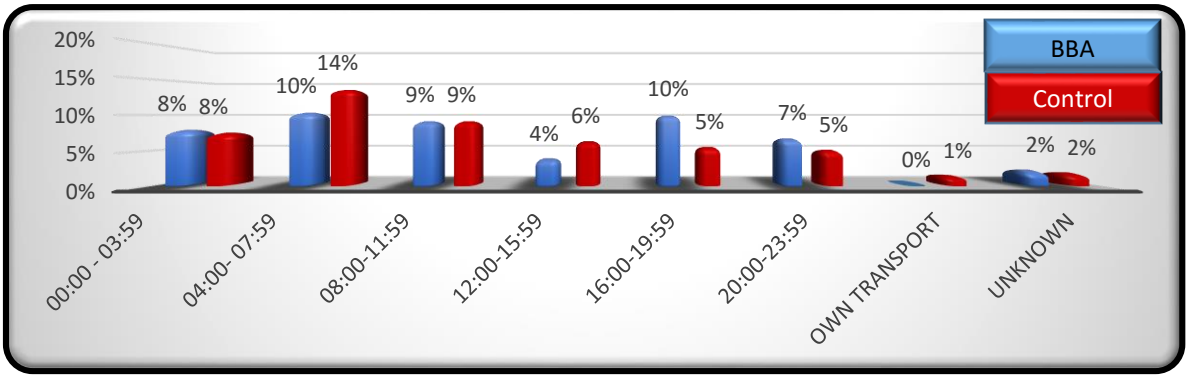

Figure 4.14: Delayed calling during labour pains (hours) (n=240)

4.2.3.3 *Transportation response time (hours)*

Figure 4.15a shows that transportation is one of the major challenges and depicts how long it took for the ambulance to arrive. It shows that for 44.2% of the participants, it arrived within the first hour of calling and for the rest it took longer than an hour. It took longer than seven hours to arrive for 2.9% while in 6.3% of cases, it did not arrive. In approximately 75% of calls the ambulance had responded within three hours.

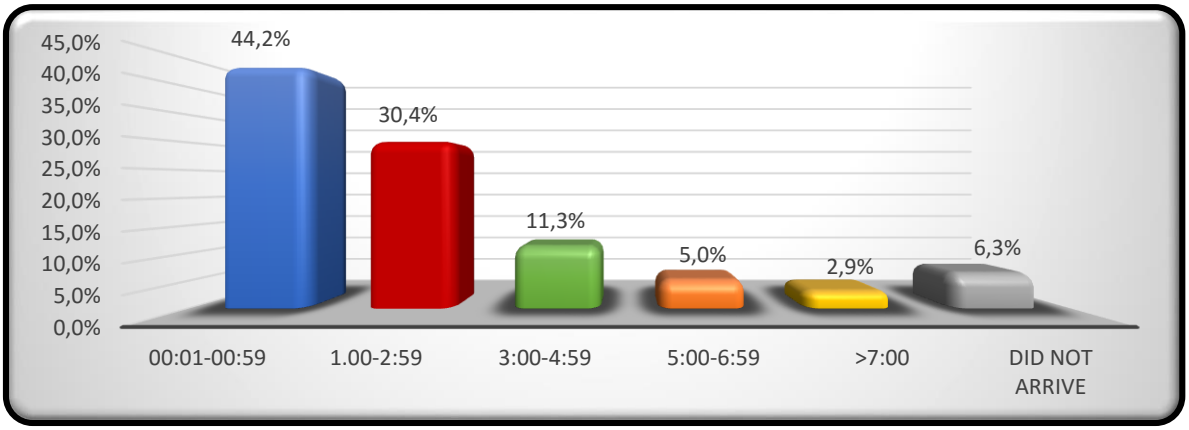

Figure 4.15a: Transportation response time of ambulance (hours) (n=240)

Figure 4.15b depicts the difference between how long it took for an ambulance to arrive at a BBA participant versus at a control participant. According to the Free State Emergency Medical Services (EMS) of the Free State Department of Health, as stated in the 2017/18 Annual Performance Plan (2017:102), EMS priority one (P1) urban response should be achieved under a 15 minutes rate and EMS P1 rural response under a 40 minutes rate. With this being said, it is taken into account that maternity cases are classified as P1. It is clear from the graph how few ambulances had responded within the first hour of being called in the BBA participants, especially when compared to the control participants. This does suggest that the delay of the ambulance arrival contributes significantly to BBAs.

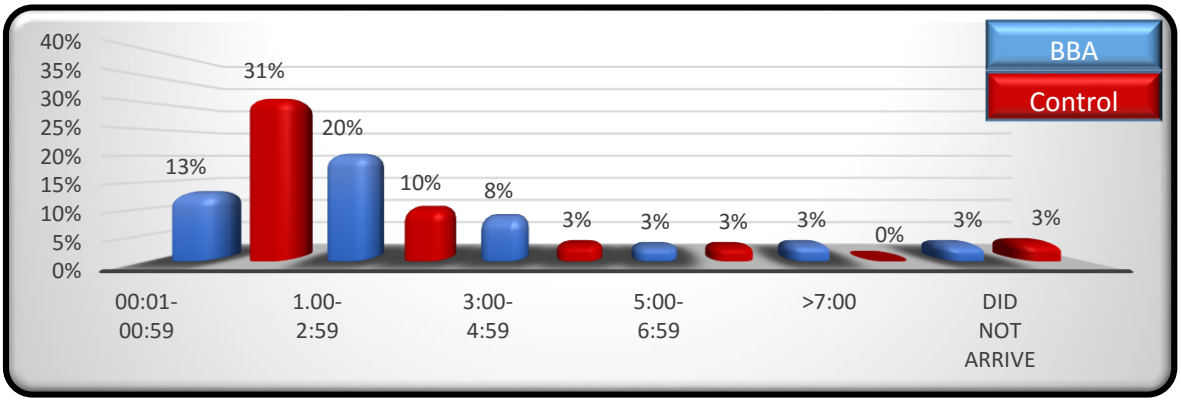

Figure 4.15b: **Transportation response time of ambulance (hours) (n=240)**

4.2.3.4 *Distance from home to the closest available health facility (Km) during the time when labour started*

The other major challenge that had an impact was the distance the participant had to travel from home to the health facility when in labour. Figure 4.16 shows that 42.5% of all participants lived within 19.9 km from the health facility. 3.8% lived between 20 and 39.9km and more than 40% lived further than 60km from the health facility.

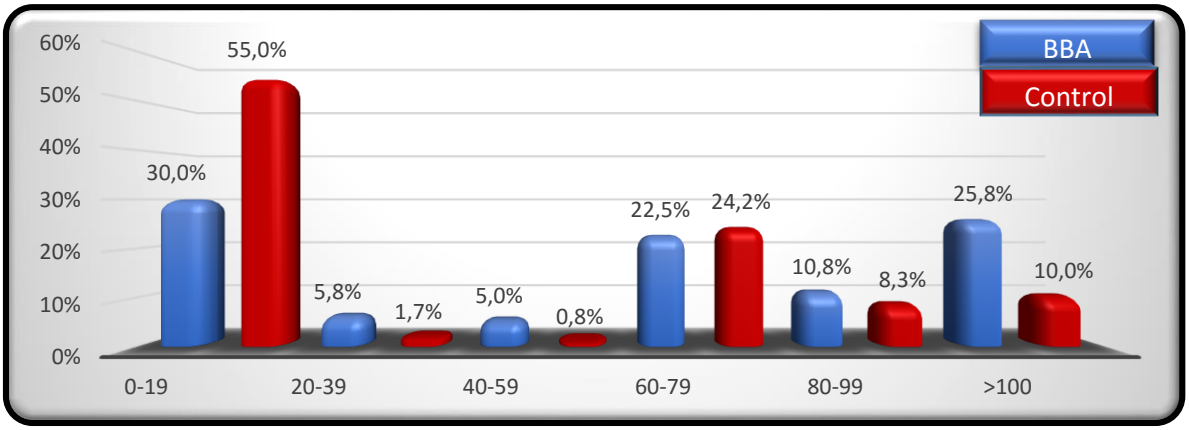

Figure 4.16: Distance from home to the closest health facility available (n=240)

4.2.4 Antenatal factors

The following tables illustrate findings after exploring possible reasons for births before arrival (BBA):

All the participants were asked about how well and to what point they had been prepared for the delivery. The various questions revealed divergence in preparing for the delivery when comparing the BBA participants with the control participants. It is clear that the BBA participants were significantly less prepared compared to the control participants. This suggests a strong patient factor as being responsible for the BBA.

Table 4.1 looked at antenatal reasons for BBAs and assessed whether the participant was booked (that is, having attended antenatal care clinic visits with a clinic card or book as evidence thereof).

The participant was also asked whether she knew she was pregnant. Of the 240 participants, 229 knew that they were pregnant. Of the 11 participants who were not aware that they were pregnant before delivery, seven were BBA participants and four were control participants.

The delivery facility was identified by only 206 participants of the 240. Twenty-nine (29) of the 34 whose delivery facility was not identified were BBA participants. This differed from the five who were control participants.

The level of care was determined for 209 participants. Twenty-seven (27) of those whose level of care had not been identified were BBA participants. This differed significantly from the four who were control participants. Of the 209 whose level of care had been identified, 206 had identified the delivery facility.

Of the 183 participants who bypassed the nearest maternity facility, 102 were BBA participants and 81 were control participants. The reason for this was because the nearest facilities were closed at night or at the time of labour.

There were 27 participants that were found to be high-risk and should have delivered at a high-risk facility; 22 of those were BBA participants and five were control participants.

There were 26 participants who did not know their expected mode of delivery, of those 19 were BBA participants and seven were control participants. Generally, the BBAs were less informed about their current pregnancy than the controls.

There were 94 participants who did not know that they were in labour, of those 57 were BBA participants and 37 were control participants.

There were 51 participants that had a precipitous labour, and of those, 46 were BBA participants and five were control-participants. This difference is clearly significant, informing us that those that ended up with BBAs had much shorter labour times.

Table 4.1: Antenatal reasons for BBAs
(Table continues on next page)

	REASONS FOR BBA:	Combined Participants			BBA Participants		Control Participants		p Value
	ANTENATAL	**Yes**	**No**	**Total**	**Yes**	**No**	**Yes**	**No**	
1	Was the participant booked?	216	24	240	100	20	116	4	0.0009
2	Did the participant know that she was pregnant?	229	11	240	113	7	116	4	0.5391
3	Was the delivery facility identified?	206	34	240	91	29	115	5	<0.0001
4	Was the level of care determined?	209	31	240	93	27	116	4	<0.0001
5	Bypassed nearest maternity unit	183	57	240	102	18	81	39	0.0022
6	High risk maternity unit	27	213	240	22	98	5	115	0.0008

7	Expected mode of delivery known (NVD / CS)	214	26	240	101	19	113	7	0.0209
8	Did the participant know that she was in labour?	146	94	240	63	57	83	37	0.0118
9	Was it a precipitous labour (started and delivered quickly, i.e. labour occurred within 2 hours)?	51	189	240	46	74	5	115	<0.0001

4.2.5 Preparedness

Table 4.2 shows preparedness for delivery. There were 27 BBA participants and 10 control participants of the 240 participants who were found not to be prepared for delivery.

Of the 240 participants, 24 BBA participants and 7 control participants were found not to be in possession of basic supplies for the baby. This was not perceive to be a culture issue as these participants were just purely unprepared while the others appeared to have had no means of buying anything due to being poor.

Of the 240 participants, 40 BBA participants and 10 control participants were found not to be in possession of basic supplies for herself (the mother).

When observing as to whether the participants had prepared for the delivery in terms of having packed basic supplies for the mother and the baby, once again it became clear that the BBA participants were significantly less prepared than the control participants as shown in Table 4.2 below with a p-value of 0.0038.

Table 4.2: Preparedness for delivery

	REASONS FOR BBA:	Combined Participants			BBA Participants		Control Participants		p Value
	PREPAREDNESS	**Yes**	**No**	**Total**	**Yes**	**No**	**Yes**	**No**	
1	Is the participant prepared for delivery?	203	37	240	93	27	110	10	0.0038
2	Does the participant have basic supplies for the baby?	209	31	240	96	24	113	7	0.0017
3	Does the participant have basic supplies for herself (the mother)?	190	50	240	80	40	110	10	<0.0001

4.2.6 Knowledge about labour

A further reason for the cause of BBAs was believed to be lack of knowledge about labour. Looking at factors around insight and level of education regarding pregnancy/labour and its

complications revealed some interesting differences on certain scores as depicted in Table 4.3 below.

4.2.7 Education

Two hundred and forty (240) participants were asked whether they knew their exact gestation period and 188 knew it, while 55 participants did not know it. Of the 55 participants who did not know their gestation period, 42 were BBA participants and 10 were control participants. Participants were also asked if they were educated on the signs and symptoms of labour. Out of 240 participants 155 said yes and 85 said no.

The participants were asked to name the signs of labour to see if they were indeed aware of the signs of labour and 223 were aware, while 17 participants could not name the signs. Participants were asked if there were physical constraints that precluded them from getting to the health facility, and of the 240 participants 176 mentioned transportation as their physical constraint and 64 participants did not have a problem. Participants were also asked if they had cognitive constraints that made them hesitant to go to the health facility, and of the 240 participants only seven, which came from the BBA participants did not want to go to the health facility. Of the 240 participants, 82 indicated that they had resource constraints (money, airtime, etc.) which made it difficult to call for assistance.

Participants were asked if they understood the risks of preterm labour, only 26 of the BBA participants understood the risks of preterm labour while there were only 36 from the control participants that understood the risk.

Participants were asked if they understood the risk of BBA. Only 37 of the BBA participants comprehended the risk of BBA while there were 47 from the control participants.

Participants were asked if they understood the complications of pregnancy; only 29 of the BBA participants understood the importance of preparation while there were only 47 from the control participants. The difference between the participant-groups on this score did not turn out to be statistically significant.

On asking the participants whether they understood the importance of labour preparation, six of the BBA participants did not understand the importance of preparation while there were only three from the control participants that did not understood the importance of preparation.

They were asked to give an opinion whether antenatal preparation would be able to and could have helped to prevent a BBA, 95 of the BBA participants believed that antenatal preparation can be of assistance, while 103 of the control participants also believed that it can help.

When asked if they knew when to call for an ambulance, 83 of the BBA participants knew when to call, while 101 of the control participants knew when to call for an ambulance. This difference between the participant groups turns out to be statistically significant.

Participants were assessed as to the number they would use to call for an ambulance and 82 of the BBA participants knew which emergency number to call while 83 of the control participants knew which number to call. The numbers mostly utilised were 112 and 10177. This difference is not statistically significant.

Table 4.3: Education (n=240)

	REASONS FOR BBA:	Combined Participants			BBA Participants		Control Participants		p Value
	EDUCATION	Yes	No	Total	Yes	No	Yes	No	
1	Did the participant know her exact gestation period?	188	52	240	78	42	110	10	<.0001
2	Was she educated on signs and symptoms of labour?	155	85	240	63	57	92	28	<.0001
3	Was the participant aware of signs of labour?	223	17	240	109	11	114	6	0.3144
4	Were there physical constraints (i.e. unable to)?	176	64	240	109	11	67	53	<.0001
5	Were there cognitive constraints (i.e. not wanting to)?	7	233	240	7	113	0	120	0.0143
6	Were there resource constraints (i.e. lack of)?	82	158	240	57	63	25	95	<.0001
7	Understands the risks of preterm labour?	62	178	240	26	94	36	84	0.1842
8	Understands the risks of BBA?	84	156	240	37	83	47	73	0.2231
9	Understands the complications of pregnancy?	153	87	240	29	91	47	73	0.0180
10	Understands the importance of preparation?	231	9	240	114	6	117	3	0.4994
11	Would antenatal preparation have helped prevent BBA?	198	42	240	95	25	103	117	0.2341
12	Knows when to call for an ambulance?	184	56	240	83	37	101	19	0.0091

13	Knows the correct number to call?	165	75	240	82	38	83	37	1.0000

4.2.8 Perceptions that lead to a BBA

Participants were asked about perceptions that could possibly lead to BBAs. Their responses are displayed in Table 4.4 below.

Table 4.4: Perceptions leading to BBAs

	REASONS FOR BBA:	Combined Participants			BBA Participants		Control Participants		p Value
	PERCEPTIONS LEADING TO BBA	Yes	No	Total	Yes	No	Yes	No	
1	Previous delivery experience(s) at maternity unit was not good	10	230	240	6	114	4	116	0.7486
2	Did NOT plan to deliver the baby at the maternity unit	4	236	240	4	116	0	120	0.1219
3	Advised NOT to deliver the baby at the maternity unit	6	234	240	3	117	3	117	1.000
4	Had previous BBA(s)	48	192	240	43	77	5	115	<.0001
5	Fear to use health facilities	10	230	240	2	118	8	112	0.1020
6	Deliberately left it until too late	4	236	240	3	117	1	119	0.6218
7	Staff attitudes	6	234	240	3	117	3	177	1.0000
8	Physical abuse	1	239	240	0	120	1	119	1.0000
9	Verbal abuse	7	233	240	1	119	6	114	0.1195
10	Voluntary decisions	7	233	240	3	117	4	116	1.0000
11	No airtime and could not call	42	198	240	36	84	6	114	<.0001
12	Ambulance delay	107	133	240	83	37	24	96	<.0001
13	Nothing for pain in hospital?	20	220	240	15	105	5	115	0.0333
14	Traditional belief (on enduring pain, etc.)?	135	105	240	60	60	75	45	0.0683
15	Sent home and told it's not time	27	213	240	14	106	13	107	1.0000
16	Cost of preparing for hospital birth too high	96	144	240	45	75	51	69	0.5101
17	No safety in hospital	6	234	240	2	118	4	116	0.6835
18	No privacy	16	224	240	7	113	9	111	0.7967
19	No confidentiality	7	233	240	2	118	5	115	0.4462

Of the 240 participants, 39 were primigravidae and thus had no previous delivery experience. Only 10 of the 201 indicated that their previous delivery experience(s) at the maternity unit was not positive; six were from the BBA participants while four came from the control participants. There were four participants out of 240 who indicated that they did not plan to deliver their babies at the maternity unit or health facility, and all four came from the BBA participants.

Three (3) BBA participants and three control participants out of all 240 participants indicated that they were previously advised not to deliver at the maternity unit or health facility because of bad treatment they would allegedly receive from the personnel (especially verbal abuse).

There were 48 of all participants that indicated that they had a BBA previously. The majority of them (43) were from the BBA participants, while five were from the control participants. This difference is clearly statistically significant.

Ten (10) of the 240 participants feared to utilise the health facilities, two were from the BBA participants and eight were from the control participants.

It was also assessed if the participants had waited deliberately until it was too late before calling for assistance. Three from the BBA participants and only one from the control participants indicated that they waited deliberately until it was too late.

There were six of the 240 participant who indicated that they had encountered staff with bad attitudes during their previous pregnancies; three were from the BBA participants and the other three were from the control participants.

There was only one participant out of the 240 who claimed to have experienced physical abuse at a maternity unit with her previous pregnancy/delivery and she came from the control participants.

Of the 240 participants, seven had experienced verbal abuse during their previous pregnancies/delivery, one was from the BBA participants and six were from the control participants.

There were seven of the 240 participants who indicated that they had made a voluntary decision not to call for assistance. Three (3) were from the BBA participants, while four were from the control participants.

There were 42 participants of the 240 who indicated that the reason they could not call was lack of airtime. Thirty-six (36) were from the BBA participants and differed significantly from the four who were control participants.

There were 107 participants of the 240 who indicated that the ambulance had delayed getting to them; 83 from the BBA participants, while the other 24 were from the control participants. This factor was also significantly different between the two participant-groups.

There were five participants from the control participants who strongly believed that the health facility does not provide anything for pain during or after delivery. Fifteen BBA participants confessed to the same belief. The remaining 220 of 240 participants were satisfied that the health facilities would provide pain relief.

There is a traditional perception that a real woman has to be able to endure labour pain. Sixty of the BBA participants and 75 of the control participants believed that a “real” woman should endure pain.

Of the 240 participants, 14 from the BBA participants indicated that they were sent home and told they were in false labour, and this number was not that different to the 13 control participants who were also sent home and told they were not in labour.

The cost of preparing for hospital birth was said to be too high by 45 BBA participants and by 51 control participants of the 240 participants.

Two (2) of the BBA participants said there was little safety in hospital, while four from the control participants also had the same view.

Of the 240 participants, seven from the BBA participants felt that there was no privacy at the health facility; there were nine from the control participants who felt the same.

There were seven participants of the 240 who indicated that there was no confidentiality at the health facility; two were from the BBA participants while five were from the control participants.

In most cases, the perceptions of the BBA participants compared to those of the control participants did not differ significantly. This shows that perception alone is insufficient as a cause for BBAs.

4.2.9 Socio-economic factors

When investigating socio-economic factors as possible reasons for a BBA/pregnancy, the two participant groups responded as depicted in Table 4.5 below.

There were only 11 preterm births from the control participants, which differed significantly from the 37 preterm births from the BBA participants. In total, there were 48 preterm cases out of 240 participants. This difference was statistically significant.

Out of 240 participants, 88 (37%) had planned pregnancies. Of these, 40 were BBA participants and 48 control participants.

Of all 240, 152 participants indicated that their pregnancies were incorrectly timed. Seventy-nine (79) were from the BBA participants and 73 were from the control participants.

There were 54 participants who indicated that their pregnancies were unwanted, 34 of them were from the BBA participants and 20 from the control participants. This difference was also significantly different between the participant-groups.

There were only 10 participants who stated that they were motivated by the promise of a social grant to fall pregnant; seven were from the BBA participants and three were from the control participants.

There seems to be a slight association with preterm births and a mild association with unwanted pregnancy and BBAs.

Table 4.5: Socio-economic factors

	REASONS FOR BBA:	Combined Participants			BBA Participants		Control Participants		p Value
	SOCIO-ECONOMIC FACTORS	**Yes**	**No**	**Total**	**Yes**	**No**	**Yes**	**No**	
1	Preterm birth	48	192	240	37	83	11	109	<.0001
2	Planned pregnancy	88	152	240	40	80	48	72	0.3485
3	Pregnancy incorrectly timed	152	88	240	79	41	73	47	0.0773
4	Pregnancy unwanted	54	186	240	34	86	20	100	0.0439
5	Motivated by social grant	10	230	240	7	113	3	117	0.3333

4.2.10 Maternal outcomes

Table 4.6 below reflects the maternal and neonatal outcomes of both participant groups. Starting with adverse maternal outcomes, the following findings were made.

Table 4.6: Maternal outcomes

	REASONS FOR BBA:	Combined Participants			BBA Participants		Control Participants		p Value
	MATERNAL OUTCOMES: Adverse maternal outcomes	**Yes**	**No**	**Total**	**Yes**	**No**	**Yes**	**No**	
1	None	109	133	240	66	54	43	77	0.0042
2	Shock	3	237	240	1	119	2	118	1.0000
3	Obstetric tears	115	125	240	47	73	68	52	0.0096
4	Uterine atony	1	239	240	0	120	1	119	1.0000
5	Retained placenta	7	233	240	4	116	3	117	1.0000
6	Puerperal sepsis	1	239	240	1	119	0	120	1.0000
7	Post-partum haemorrhage secondary	1	239	240	1	119	0	120	1.0000
8	Death	0	240	240	0	120	0	120	1.0000
9	Other…Specify)	11	229	240	5	115	6	114	1.0000
	Interventions on mother upon admission to hospital								
10	Blood transfusion	1	239	240	1	119	0	120	1.0000
11	Intravenous fluids	58	182	240	17	103	41	79	0.0005
12	Antibiotics	1	239	240	0	120	1	119	1.0000
13	Manual removal of placenta	7	233	240	4	116	3	117	1.0000
14	Hysterectomy	0	240	240	0	120	0	120	1.0000
15	Repair of tears	91	149	240	33	87	58	62	0.0013
16	Other…. (Specify)	76	164	240	43	77	33	87	0.3953
17	HAART			70	40		30		

There were 109 of the 240 participants who had adverse maternal outcomes, 66 were from the BBA participants and 43 were from the control participants. This difference was again measured to be statistically significant. BBAs are associated with adverse maternal outcomes.

Only three of the 240 participants experienced shock, one from the BBA participants and two from the control participants.

There was only one participant with uterine atony and she was from the control participants. There were seven of the 240 participants with retained placentae, four were from the BBA participants while three were from the control participants.

There was only one participant out of 240 with puerperal sepsis, and she was from the BBA participants.

There was only one participant of the 240 with secondary post-partum haemorrhage and she was from the BBA participants.

Fortunately, there was no maternal death that occurred in the 240 participants.

Looking at interventions on the mother, there was only one participant that received a blood transfusion out of the 240 and she was from the BBA participants.

There were 58 participants that required intravenous fluid administration, 17 of them were from the BBA participants while 41 were from the control participants. This may well indicate a high prevalence of intravenous fluid use in the hospital.

There was only one participant that required antibiotics out of the 240 participants and she was a control participant.

There were seven participants that required manual removal of the placenta; four were from the BBA participants while three were from the control participants.

None of the participants had a hysterectomy.

There were 91 participants out of 240 that had their tears repaired, 33 were from the BBA participants while 58 came from the control participants.

There were 76 out of 240 participants (32%) that received the Highly Active Anti-Retroviral Therapy (HAART); 43 were from the BBA participants and 33 were from the control participants.

4.2.11 Neonatal outcomes

Table 4.7 lists the neonatal outcomes and the following were the findings:

Table 4.7: Neonatal outcomes
(Table continues on next page)

	REASONS FOR BBA:	Combined Participants			BBA Participants		Control Participants		p Value
	OUTCOME OF NEWBORN (AT THE TIME OF ADMISSION)	**Yes**	**No**	**Total**	**Yes**	**No**	**Yes**	**No**	
1	Alive	235	5	240	115	5	120	0	0.0599
2	Stillborn	4	236	240	4	116	0	120	0.1219
3	Died after delivery	1	239	240	1	119	0	120	1.0000
4	Birth weight …g	Mean			2771.92			3150.83	
5	Baby's Apgar score								

	Admission to NICU / Nursery								
6	Yes / No	0	240	240	0	120	0	120	1.0000
7	Prematurity	24	216	240	18	102	6	114	0.00164
8	Birth asphyxia	1	239	240	1	119	0	120	0.5000
9	Sepsis	2	238	240	2	118	0	120	0.4979
10	Hypoglycaemia	2	238	240	2	118	0	120	0.4979
11	Respiratory distress	0	240	240	0	120	0	120	1.0000
12	Hypothermia	0	240	240	0	120	0	120	1.0000
13	Other…. (Specify)	171	69	240	79	41	92	28	0.0866

There were 240 newborn babies, and of those five were not born alive. All five of them were from the BBA participants. Of those, four were stillborn and one died after delivery.

The mean birth weight for the BBA participants was 2771.92g, while the mean birth weight for the control participants was 3150.83g, the controls being slightly heavier. There were also more premature babies in the BBA participants than in the control participants.

None of the newborn babies of the 240 participants were admitted in the Neonatal Intensive Care Unit (NICU).

Twenty-four (24) of the 240 participants were born prematurely; 18 were from the BBA participants while six were from the control participants. This confirms that prematurity is associated with BBAs (or *vice versa*.)

Only one of the 235 live births was reported to have suffered birth asphyxia and that one came from the BBA participants.

Two (2) of the 235 live births had sepsis and a further two suffered from hypoglycaemia and another two diagnosed with sepsis. All six of these babies were from the BBA participants.

None of the participants had respiratory distress nor hypothermia. Out of the 235 live births of 240 participants, 171 (73%) received Nevirapine (NVP); 79 were from the BBA participants while 92 were from the control participants.

4.2.12 Participants' opinions

Participants were asked the following open-ended questions in an attempt to identify the causes of BBA and decide where the educational emphasis should be focused:

1. *What are the things that you would have liked to know with regard to planning and preparation before giving birth?*

Figure 4.17 below shows that most participants, 83% of them, felt that they were satisfied with what they knew about planning and preparation before giving birth. Five percent (5%) indicated that they would have loved to know more about the signs of labour, while 12% said that they did not know what to prepare and only one participant (0%) indicated that she does not know.

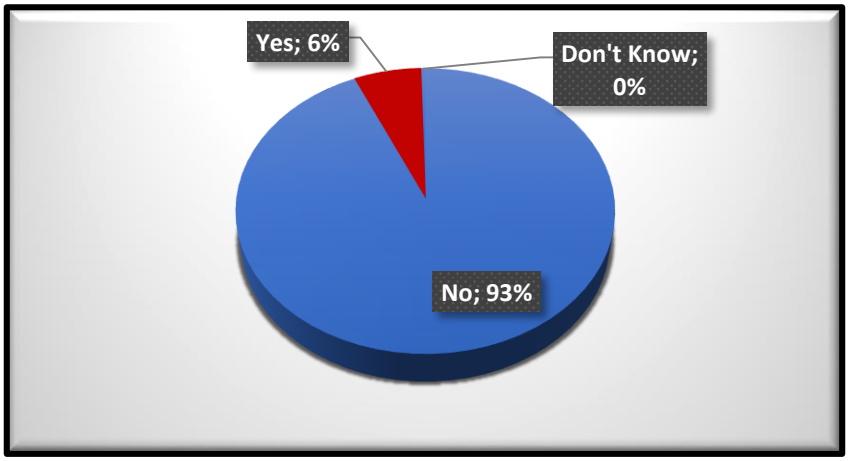

Figure 4.17: Planning and preparation (n=240)

2. *What would have been a suitable way to prepare you not to have a BBA?*

Participants were asked to provide their own opinions on possible ways to prevent having a BBA and the following were the outcomes, as depicted in Figure 4.18 below:

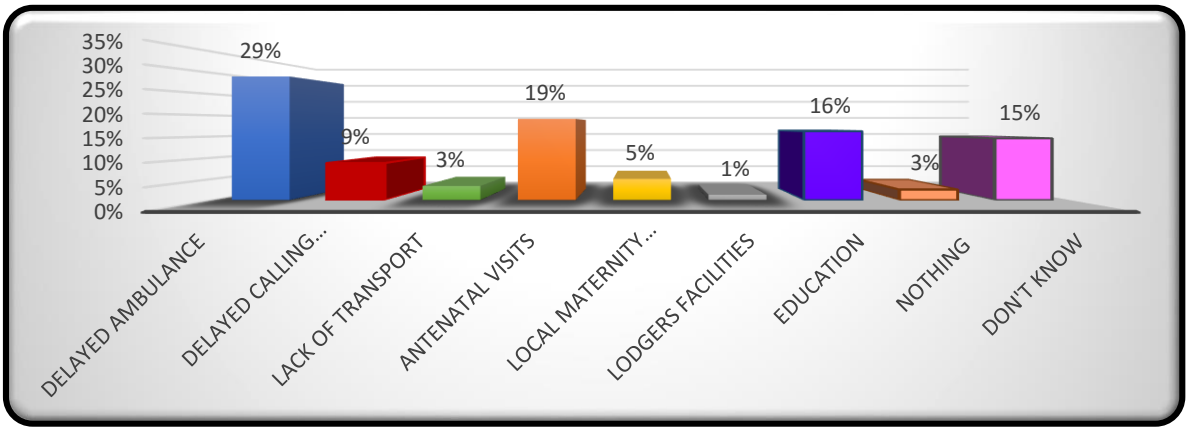

Figure 4.18: Prevention of BBAs (n=240)

There was an indication from 29% of the 240 participants that the ambulance should not delay, 9% said mothers should not delay calling for an ambulance, 3% said lack of own transport is a problem. The others said regular antenatal care visits could assist (19%), 5% said having a local clinic that functions on a 24 hours basis to assist with deliveries , 1% said having lodging facilities at the health care facility to prevent being sent home and giving birth on the way. Education on the signs of labour was said to be a solution by 16% of the participants, 3% said nothing would be able to prevent a BBA and 15% said that they did not know what could help prevent or reduce BBAs from occurring.

3. *Would you consider using traditional medicines to speed up the labour process?*

Figure 4.19 below shows that 6% of the participants said YES when asked if they would consider the use of traditional medicines to speed up the birthing process; nine were control participants and six were BBA participants. Of the 240 participants 93% said NO, and 1% said she does not know.

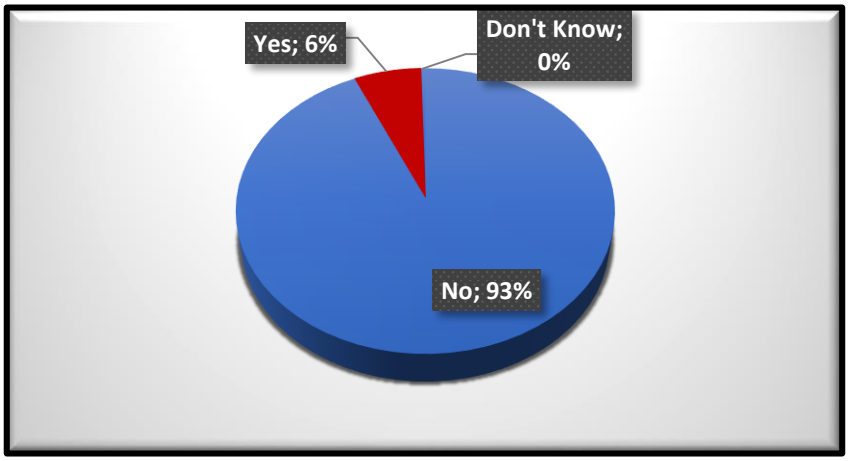

Figure 4.19: Use of traditional medicines (n=240)

4.3 CONCLUSION

The results of the findings of the data collection tool were presented in this chapter.

Beeram *et al*. (1995:313) had concluded that morbidity had a twofold increase, while mortality had increased 11-fold in BBAs in comparison to those born in hospital. However, this was not the case in this current Mangaung study.

In Chapter 5, the researcher provides a discussion of the findings in order to identify the target groups for the educational outreach on BBAs in the health facility.

CHAPTER 5

DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION

In Chapter 4, the researcher made use of graphs and tables to present the results from the study.

In this chapter the researcher discusses the findings in order to identify the target groups to educate on births before arrival (BBAs) at the health facilities in Mangaung.

5.2 THE PURPOSE OF THE STUDY

The purpose of this study was to investigate causes of births before arrival at the health facilities in order to identify the target groups for the educational outreach to reduce BBAs in the Mangaung area. This study would assist to direct the educational recommendations for intervention with the hope of preventing further unnecessary BBAs.

5.3 DISCUSSION

According to Pattinson, R.C (2000:11) and Beeram *et al*. (1995), BBAs have a prevalence of 10% and a tenfold mortality rate. It was also presented during the 2015 Free State Millennium Development Goals (FS MDG) summit that the infant mortality rate in the Free State was relatively high. The rate of BBAs in the Mangaung area had remained 10% in the last decade and resulted in high mortality and morbidity rates. As a result, the researcher planned an investigation at the National District Hospital (NDH) maternity unit to inquire on reasons, causes, or contributing factors leading to BBAs in an attempt to identify the target groups for the educational outreach to reduce BBAs in Mangaung.

The researcher looked at various literature in an attempt to find possible causes or contributing factors leading to BBAs in South Africa as well as internationally. The following were some of the possible causes that were identified:

5.3.1 Socio-demographic variables

Lazić and Takač (2010:11-14) divulged in their study based on data from the medical records on the safety of unplanned home births that hospital delivery is approximately seven times safer than unplanned home delivery. They also ascertained that 55.2% of mothers who gave birth at home or on the way to hospital lacked a level of higher education and 87.4% of mothers who gave birth in hospital had a level of higher education.

They found that the following were factors that made unplanned home deliveries before arrival at the health facility more common: high parity, marital status, absence, or insufficiency of antenatal care, and lower education levels.

In the current Mangaung study, there were no significant differences in age, marital status, occupation and even ethnicity between the BBA and the control participants, except in the level of education attained.

5.3.2 Marital status

It was noted that 82% of the total number of participants were found to be single and there was no significant difference in marital status between BBAs and in hospital deliveries.

5.3.3 Ethnicity

Most of the participants were of the Black ethnic group and there was no significant difference that was noted between the two participant groups.

5.3.4 Level of education

The control participants were found to be more educated than the BBA participants, and having acquired tertiary qualifications while none from the BBA participants had obtained a tertiary level of education. As a result it can be deduced that the higher the educational level, the more likely the mother was to deliver in the hospital.

5.3.5 Occupation

Looking at occupation it was found that most of the participants were unemployed. Additionally, there was no significant difference between the BBA and the control participants with respect to occupation.

5.3.6 Maternal factors

According to Pilkington, Blondel, Drewniak and Zeitlin (2014:904-908) births before arrival (BBAs) or out-of-hospital births are quite rare in France. Conversely, in underserved areas, the rates of BBAs are much higher, especially for women of higher parity. Chaudhary (2005:116) indicated that about 85% of deliveries in Nepal occurred at home, and 55% of those deliveries were conducted by untrained friends and relatives.

In the current Mangaung study, findings coincided with the literature and BBA participants were found to be more often multiparas than the control participants. The majority of the BBA participants had delivered at home.

5.3.7 Being “booked”

It was noted in the current study that most of the BBA participants were un-booked. There were more BBA participants that delivered at a gestation less than 37 weeks than in the control participants. This gives a clear indication that BBAs are associated with the “unbooked” status as well as preterm births.

Risk factors which were identified to increase the probability of unplanned deliveries at home or on the way to hospital were lower maternal schooling, high parity and absence of antenatal care which coincide with the literature. Consistent with literature also, there were a high number of unbooked mothers of BBAs.

5.3.8 Number of antenatal clinic visits

Most BBA participants did not attend antenatal care, and as a result had neither check-ups nor antenatal education.

5.3.9 Decision to seek medical assistance for the delivery

Most participants claimed to have sought medical assistance for the delivery during labour.

5.3.10 Medical assistance for the delivery was sought by whom?

The majority of the participants indicated that they personally sought medical assistance for delivery.

This clearly shows that most participants did in fact realise that there was a need to have medical assistance during labour.

5.3.11 Escorted to health facility

In this study it was also discovered that most of the BBA participants were not escorted to the health facility by a spouse, partner, relative or friend. This was not the case for the control participants as they were generally accompanied by someone else to the health facility. This thus also indicated that the BBA participants did not have the necessary support structures or systems at home that the control participants were afforded during labour.

5.3.12 Presence of a birth attendant

It was also noted in this study that very few BBA participants were attended to by a skilled health professional during delivery and that coincided with the literature. Most of them were assisted by a traditional carer, relative, neighbour or were entirely all on their own without any help.

5.3.13 Transportation

De Almeida, Alencar, Novaes, Franca, Siqueira, Schoeps, Campbell and Rodrigues (2005:367) noted in their study that mothers reported that the lack of available transportation to the health facility was one of the reasons for home delivery.

In the current Mangaung study, the following observations were made regarding transportation:

5.3.13.1 *Mode of transportation*

The ambulance was the most commonly used mode of transport by the participants from both BBA and control groups alike, and very few participants made private arrangements for transportation. It is therefore evident that the pregnant population of Mangaung in the Free State depends heavily on the ambulance services for transportation to the delivery facility when in early labour.

5.3.13.2 *Timing of the call requesting transportation (hours)*

Chaudhary (2005:116) indicated that there were various factors that were responsible for the delay in arrival at the health facility.

Another factor that was discovered in this study was a great delay in calling for transportation from the time labour pains started for both participant groups. However, the control participants were found to have called much earlier than the BBA participants.

5.3.13.3 *Transportation response time (hours)*

According to the Free State Emergency Medical Services (EMS) of the Free State Department of Health as stated in the 2017/18 Annual Performance Plan (2017:102), EMS priority one (P1) urban response should be achieved in a time frame of under 15 minutes and EMS P1 rural response in under 40 minutes. Maternity cases are classified as P1.

It was discovered in this study that very few ambulances had responded within the first hour of being called to the BBA participants when compared to the control participants. This suggested that the delay of the ambulance arrival also contributed significantly to BBAs.

5.3.14 Distance from home to the closest available health facility (Km) during the time when labour started

Distance was another major factor that was found to have had a contribution to BBAs as the participant had to travel long distances from home to the health facility when in labour.

BBAs should not be ignored, and it is thus important to anticipate and plan for the occurrence. It was found that distance added a great risk to out-of-hospital deliveries as BBAs occurred more often in rural areas of Mangaung.

5.3.15 Antenatal factors

Pilkington *et al.* (2011:1170) stated that the onset of labour is unpredictable and can also progress very quickly, leading to the unexpected delivery occurring at home or *en route* to the health facility (BBA).

Chaudhary (2005:115) found that only about 11% of pregnant women had regular antenatal care visits and that many women did not discuss the place of delivery during the ANC, nor at home with their family.

In the current Mangaung study there were more BBA participants that did not attend the antenatal care than in the control participant group.

It was also discovered that participants bypassed the nearest health facility with the most being from the BBA participants as these facilities were not geared up for deliveries and other health facilities were not open during the time at which labour started.

The BBA participants were found to be less informed about their current pregnancy than the control participants. However, more BBA participants knew when they were in labour than the control participants.

Some of the women, according to Chaudhary (2005:115) had precipitated labour, while others were diagnosed with false labour pains and returned home, and as a result they later gave birth on their way to the hospital.

This study concurs with the literature that more of the BBA participants had a precipitous labour than the control participants. That difference was clearly significant, depicting that those that ended up with a BBA had much shorter labour times.

5.3.16 Preparedness

McLelland, McKenna and Archer (2013:20) indicated that unplanned BBAs are not an unpredictable freak occurrence but they are an event that should be anticipated that requires the implementation of educational and policy strategies to help minimise any risk that is associated to it.

The current study observed that BBA participants had been significantly less prepared compared to the control participant for the delivery in terms of having packed basic supplies for the mother and the baby.

5.3.17 Education

In the current Mangaung study, education was found to be another contributing factor to the causes of BBAs. The following were some of the factors that were explored under education:

It was discovered that a number of participants lacked knowledge and insight about pregnancy/labour; some of the participants were found not to have been educated on the signs and symptoms of labour and its complications. This study revealed that most BBA participants compared to the control participants did not know their gestation period.

Participants also reported that transportation was one of the physical constraints that precluded them from getting to the health facility timeously. Others had cognitive constraints that made them hesitant to go to the health facility. In addition, some indicated that they had resource constraints (money, airtime, etc.) which made it difficult for them to call for assistance. With that being said, participants were not aware that the 112 cell phone emergency number did not require airtime.

In the current Mangaung study, most participants understood the importance of labour preparedness and they also believed that it would be of assistance in the process of reducing BBAs.

This study also revealed that fewer BBA participants than control participants knew when to call for an ambulance, there were fewer BBA participants that knew the correct emergency number to call during labour and numbers mostly utilised were 112 and 10177.

5.3.18 Perceptions leading to BBAs

It was discovered that there were some of the BBA participants that deliberately wanted to deliver at home as their preferred place of delivery. This showed that such decisions without being properly planned with health care professionals are contributing factors to BBAs.

This study also revealed that participants who had a previous BBA had a high likelihood to have another BBA.

Most participants indicated that the cause for having a BBA was due to the ambulance that had delayed getting to them.

In most cases there was no significant difference in the perceptions leading to BBAs between the BBA participants and the control participants. This showed that perceptions alone were insufficient as causes for BBAs.

5.3.19 Socio-economic factors

Wagle *et al.* (2004:1) found that a distance that was more than an hour to the maternity hospital, low service score status, low education, multi-parity, and mothers who do not seek antenatal care while they are pregnant were statistically and significantly associated with an increased risk of home delivery or higher prevalence proportion of home deliveries.

Gunnarsson, Smarason, Skogvoll and Fasting (2014:1003) looked at the prevalence, maternal characteristics and the effects of unplanned out-of-institution births in Norway. They indicated that there had been a movement in many countries towards the centralisation of births to fewer and larger units with the hope of getting more specialised care. However, this resulted in increasing the risk of unplanned out-of-hospital deliveries.

In the current Mangaung study, while investigating socio-economic factors as possible reasons for a BBA/pregnancy, the following were discovered from the two participant groups:

There were more pre-term births from the BBA participants than in the control participants. Most participants had not planned to get pregnant. There were more participants from the BBA participant group than in the control participant group who indicated that their pregnancies were unwanted, and more participants from the BBA participants who indicated that they were motivated by the promise of a social grant to fall pregnant.

5.3.20 Distance

Pilkington, Blondel, Drewniak and Zeitlin (2014: 906) discovered that long travel time or travel distance to the maternity unit as well as poor access to obstetric care has a direct relation to the higher neonatal mortality and morbidity. They added that the BBA rates of women who resided 30 km or more from their nearest unit were more than double and they were found to be even higher when high parity came into play.

In the current study, findings concurred with the literature. The distance the participant had to travel from home to the health facility when in labour had a major impact and contributed

greatly to BBAs as most of the BBA participants (>50%) lived more than 30 km from the health facilities.

The association between distance to the closest maternity unit and out-of-hospital births varied according to parity. The risk was also higher among the older women, women of the higher and lower social classes, and among those who lived in remote rural areas.

This study confirmed that BBAs were also strongly associated with parity and the distance to the closest maternity unit.

5.3.21 Adverse maternal outcomes

Lazić and Takač (2010: 11-14) revealed that a birth that occurs in hospital is approximately seven times safer than an unplanned home delivery. They concluded this after comparing perinatal mortality, which was 68% for unplanned home deliveries: 13 (22%) versus 1399 (8%) for hospital deliveries. Unplanned deliveries which occurred at home and on the way to the health facility were more common in multiparous women (ratio of 4:1 compared to 1:1 for the hospital births).

In this study, BBA participants experienced more adverse outcomes than the control participants. That difference which was quite significant clearly indicated that BBAs are associated with adverse maternal outcomes.

Fortunately, there was no maternal death that occurred during the period of this study. There were more control participants that required intravenous fluid administration than the BBA participants and more control participants had tears that required to be repaired than the BBA participants.

More of the BBA participants also had to be given Highly Active Anti-Retroviral Therapy (HAART) than the control participants.

5.3.22 Outcomes for the newborn

Lazić and Takač (2010: 12) said that unplanned deliveries that occurred at home and on the way to the health facility were considered to be high-risk emergency deliveries. Infants born in these unplanned emergency settings were said to be at a higher risk of

complications because of respiratory distress, hypoxia, prematurity, infection, acidosis and hypothermia.

In the study by Bassingthwaighte and Ballot on the outcomes of babies born before arrival at a tertiary hospital in Johannesburg, South Africa (2013:139-144) they explain that the Millenium Development Goal (MDG) 4 aims at reducing the mortality rate of children under the age of 5 by two thirds between the years 1990 and 2015. They indicated that South Africa was amongst the 15 countries that failed to achieve the targeted reduction. The death of neonates accounted for 40% of mortality in children under 5 years of age. Half of these neonatal deaths occurred during the first 24 hours after birth and 75% happened during the first week, while preterm birth, severe infections, and asphyxia were found to be the main causes of death.

They added that babies born before arrival (BBAs) constituted a high-risk newborn population. The literature also demonstrates that BBAs had increased perinatal mortality and morbidity, a longer duration of hospital stay, and on average, lower birth weight and gestational age compared with hospital born neonates. The research surrounding BBAs seemed to conclude that this was a high-risk group. There was a need for more recent evidence from the developing world context. Recognising neonates at increased risk of morbidity and mortality was of particular importance, as resources and access to tertiary specialised neonatal services was limited.

In the current Mangaung study, none of the newborn babies were admitted in the Neonatal Intensive Care Unit (NICU). There were more pre-term births in the BBA participant group than in the control participant group. It was also discovered that the BBA participant group had newborns that had hypoglycaemia and sepsis while there were none from the control participant group.

It is also interesting to note that the majority of the babies from both the control participants and the BBA participants received Nevirapine after delivery. In general, babies from the current Mangaung study performed much better than what literature indicates.

5.4 PARTICIPANTS' OPINIONS

Participants were asked to offer their own opinions on three questions in an attempt to find the possible causes of BBA in order to decide where the educational emphasis should be placed.

Most of the participants indicated that they did not desire to know anything more where planning and preparation for giving birth were concerned. However, it was discovered that some of the participants indicated that they did not know the signs of labour and others did not know what to prepare for delivery.

Participants stated that in order to prevent having a BBA, ambulances should not delay in reaching the pregnant women; they added that pregnant women should also not delay calling for EMS. Women should attend antenatal care clinics as soon as they discover that they are pregnant to be educated on signs of labour, risks and complications of pregnancy and in general how to prevent a BBA.

Most participants also indicated that they would not consider using traditional remedies to speed up the birthing process. Some of the remedies are said to have unknown quantities of oxytocin mixed with them, which is a natural hormone that helps with contractions of the uterus during childbirth, but could result in undesirable side effects or adverse effects.

When the participants were asked about the local causes of BBAs it was discovered that they knew how to prevent BBAs but did not do the right thing. As a result teaching them how to prevent BBAs might not be the most important thing to do but rather teaching them how to change their cognitive knowledge and behaviour.

As a result, it is concluded that the educational emphasis should thus be on changing cognitive behaviour.

5.5 CONCLUSION

The findings of the data collection tool were discussed in this chapter.

In Chapter 6, the researcher offers conclusions and recommendations on the findings that were made identifying the target groups for the educational outreach on BBAs in the health facility.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

In Chapter 5, the findings of the data collection tool were discussed.

In this chapter the researcher provides a brief overview of the study, followed by the review of the objectives, summary of the findings and identification of the study limitations and draws conclusions on the findings on identifying the target groups for the educational outreach on births before arrival (BBAs) and makes recommendations in order to reduce them in the Mangaung area.

6.2 THE OVERVIEW OF THE STUDY

An in-depth research assessment was conducted and concluded at National District Hospital in Mangaung over a period of six (6) months with a view to identify the target groups for the educational outreach to reduce the number of Births Before Arrival (BBAs) at the health facilities in Mangaung. The researcher made every effort to address the research questions as presented in Chapter 1 (cf. Section 1.6).

In the attempt to address the problem statement, the researcher conducted a study utilising a data collection tool to find the possible causes of BBAs to identify the target groups for the educational outreach to reduce BBAs in Mangaung. It was also indicated that once the local causes or contributing factors were known, suitable education strategies would be recommended.

The research questions (objectives) are reviewed below, the main findings summarised, and the conclusions drawn for the findings. The contributions to knowledge are proposed, limitations of the study are discussed and recommendations are made and these are followed by the concluding remarks.

6.3 OBJECTIVES OF THE STUDY

The researcher made every effort to establish the following objectives:

6.3.1 Objective 1: Local causes or contributing factors leading to BBAs, target groups and outcomes of BBAs in Mangaung area

The first objective of the study was to identify possible local causes or contributing factors leading to BBAs, target groups and outcomes of BBAs in Mangaung area.

A literature study looking at South Africa and internationally was conducted and a data collection tool was utilised in order to address this objective. Factors that were explored in this study included socio-demographic variables, maternal factors, transportation, antenatal factors, preparedness, education, perceptions leading to BBAs, socio-economic factors, adverse maternal outcomes, and the outcomes of the newborn immediately after delivery (cf. section 2.3.).

The objective was achieved and the following causes or contributing factors leading to mothers ending up with a BBA, were found to be more pertinent in Mangaung:

a) **Delayed calling for transportation:** There was a great delay in calling for transportation from the time labour pains started;
b) **Delayed ambulance:** Delayed ambulance transportation led to births occurring before arrival at the health facility;
c) **Precipitous labour:** Some of the BBA participants were found to have had a precipitous labour and as a result they had a much shorter than anticipated labour period;
d) **Lack of Knowledge:** BBA participants lacked knowledge and insight about pregnancy/labour, signs and symptoms of the onset of labour, as well as its complications; others did not know their gestation period;
e) **Multiparity:** The current Mangaung study findings as well as the literature on BBAs revealed that mothers with BBAs are more often multiparas and have a tendency to have precipitous labour with shorter labour times and are not primigravidas as some literature indicates;
f) **Distance:** It was also found to be a contributing factor to BBAs as the participant had to travel long distances from home to the health facility when in labour. Most of the BBA participants (>50%) in the Mangaung area lived more than 30 km from the health facilities;
g) **The mother's level of education:** This study revealed that mothers with a higher education level were found to have delivered in the hospital;

h) **Unbooked mothers:** Most BBA participants did not attend antenatal care, as a result they neither had regular check-ups nor antenatal care education;
i) **Social structure or support:** It was also noted in this study that very few BBA participants were attended to by a skilled health professional during delivery, as predicted by the literature. Most of them were assisted by a traditional carer, relative or neighbour, or were entirely on their own without any help; and
j) **Preparation for labour:** The majority of BBA participants had not prepared for the delivery in terms of having packed basic supplies for the mother and the baby, and labour seemed to have caught them by surprise.

The following were the common outcomes of BBAs in Mangaung:

a) There were more pre-term births from the BBA participants. BBA participants had more adverse outcomes, like hypotension, and placental retention.

6.3.2 Objective 2: Recommendations for educational avenues to prevent BBAs in Mangaung

The second and final objective was to make recommendations for the educational avenues to prevent BBAs in Mangaung. The objective was achieved by this study and resulted in the recommendations stated below (cf. Section 6.6).

The target groups for the educational outreach on BBAs in Mangaung:

A cognitive analytic process was followed from the causes or contributing factors identified in the literature to the responses and findings from this study and as a result the following three target groups were thus identified:

a) The ambulance personnel including the dispatch or call centre team (to identify call priorities);
b) The antenatal health care personnel (so as to educate pregnant mothers continuously during the ANC visits); and
c) The pregnant mother or patient (including women in childbearing age, those who wish to get pregnant, and their support structures).

6.4 CONCLUSION

The study was initiated by the fact that the researcher encountered multiple BBAs in the pre-hospital emergency medical care field of work and this triggered the desire to find the possible solutions to that problem. The researcher initially intended to find the local reasons or causes of BBAs in order to educate the ambulance or emergency medical services personnel.

The study confirmed that BBAs are at high risk of continuously occurring if ignorance is not addressed and mitigating strategies are not put in place to address the problem.

When the participants were asked on the local causes of BBAs or possible ways to prevent BBAs, it was apparent that although many participants had the knowledge on how to prevent BBAs, they did not apply it. It is concluded that the educational emphasis should therefore be shifted towards changing pregnant women's behaviour during pregnancy rather than just focus on their understanding and cognition of the facts around BBAs.

With these proposals towards educational efforts changing behaviour, the researcher envisages a reduction to the BBA rate resulting in the reduction of the neonatal mortality and morbidity, thus coming a step closer to reaching the Sustainable Development Goals in the Mangaung area.

6.5 LIMITATIONS OF THE STUDY

The following limitations are recognised by the researcher:

The available literature on the causes of births before arrival or contributing factors leading to accidental deliveries outside of the health facilities were very limited.

The exclusion of BBAs that were transported to Pelonomi Hospital and MUCPP Clinic instead of NDH can also be viewed as a limitation.

Another limitation is on the distance from the participant's house (address provided) to the health facility and response time it took for transportation to arrive. These were obtained from the participants then correlated and verified using the participant's patient report form provided by the EMS personnel at the health facility during handover or delivery of the

patient. The distance from home to the health facility was then estimated using Google maps, and thus the accuracy thereof can also be viewed as a limitation.

The initial focus was on finding contributing factors or causes of BBAs so as to educate the ambulance or emergency medical services (EMS) personnel on the prevention and/or reduction thereof and only to discover that there were many more avenues which need to be used to attend to the control of BBAs.

Educational responses go further than just educating EMS personnel as initially envisaged by the researcher coming out of the EMS field. This research helped to reveal that it is not just the ambulance personnel that might be contributing to the causes of BBAs or who require to be educated on the prevention and reduction of BBAs. An educational response seeking to reduce BBAs needs to be more comprehensive.

Ultimately, one could argue that the entire population of Mangaung needs to be educated on the local factors that contribute to BBAs as established in order to reduce or avoid further BBAs.

Maternal and child health has led to the introduction of Essential Steps in the Management of Obstetric Emergencies (ESMOE) programme for pre-hospital emergency medical care providers. This may expand the domain and scope of practice for the EMS providers, and as a result, this would require further research for official expansion of the scope of practice throughout South Africa.

6.6 RECOMMENDATIONS

Through a cognitive reasoning process from the current Mangaung study, the following recommendations can be made in order to reduce BBAs in the Mangaung area focusing on the three identified target groups:

i. The ambulance personnel (paramedics) including the dispatch or call centre team

A well-organised and functioning EMS system can minimise poor health outcomes, mortality and morbidity. McLelland *et al.* (2011:24) indicated that paramedics should be recognised as the emergency maternity care providers for those women who find themselves in the

situation of an unplanned BBA and thus should be provided with a very good educational support so they can best manage these mothers and babies.

Special attention needs also be given to EMS officials working in rural areas of Mangaung where women have to travel long distances to deliver their babies, to equip them with sufficient knowledge on managing obstetric emergencies.

The dispatch team has to be educated in emergency medical dispatch to ensure that they are able to assess the degree of an emergency and enable them to properly determine call priorities (Triage). The dispatch team has to ensure that the maternity dedicated ambulances are dispatched correctly and timeously to maternity patients as intended, and that the stipulated dispatch priority target times are attained.

ii. The antenatal health care personnel

The participants in this study clearly indicated the need for education on signs and symptoms of the onset of labour, risks and complications of pregnancy and how to prepare for delivery and to prevent having a BBA. Antenatal health care personnel are usually one of the first contacts with pregnant women and should thus take advantage of time spent with them to tirelessly educate pregnant mothers during the ANC visits. They should also evaluate them for precipitous labour and make arrangements for those with the likelihood of a shorter labour duration. It is recommended to have discussion groups involving the pregnant women's significant other in order to ensure that there is a good support system in place.

iii. Pregnant women

The pregnant women in this current Mangaung study thought it not necessary to plan and properly prepare as they believed to have sufficient knowledge about planning and preparation before giving birth. It is however recommended that they be made aware that they have to take responsibility for their own pregnancy and ensure that they learn and acquire more knowledge on the signs and symptoms of the onset of labour, risks and complications of pregnancy, and how to prepare for delivery in order to avoid having a BBA.

- Radio messages could be broadcast via the local or popular radio stations in Mangaung (such as Lesedi FM, Motsweding FM, Umhlobowenene FM, OFM, Metro FM and

Motheo FM) regarding the information of pregnant women on normal pregnancy signs of labour and prevention of BBAs.

- Television adverts, social media video clips and written messages - regarding general information on pregnancy, signs of normal pregnancy and labour, and the importance of ANC visits and the prevention of BBAs.
- It is vitally important to educate pregnant women, especially multiparas and women living far from maternity facilities, about the risks associated with BBAs.
- Efforts should be made towards educating the pregnant women or mothers and those planning to fall pregnant on the use of mother-lodger facilities (maternity waiting homes) that are available to them in order to circumvent the transport issue and negative consequences that can occur due to lack of transportation or from living far from the health facilities or maternity units for those who do not have transportation.
- Educate the pregnant mothers on facilities such as *Mom-conne*ct that tracks individual pregnancies and send out sms reminders on the duration of pregnancy, signs and symptoms of labour and their follow-up clinic dates.
- Educate pregnant mothers on birth preparedness, how to prepare for delivery and when to call and what number to dial for an ambulance.
- The residents of Mangaung should take hands, work together and support those who are pregnant in the area and help with their monitoring and assist in calling for an ambulance early.

6.7 CONCLUDING REMARKS

Due to the fact that the researcher works in the pre-hospital emergency medical care field where he encountered multiple BBAs which triggered the desire to find the solutions to that problem, the researcher intended to find the reasons so as to educate the ambulance or emergency medical services personnel.

During the course of this study, it became very evident that BBAs were not only an EMS issue but also an entire health care system’s problem that affects the population at large. Therefore, the entire population of Mangaung, with the three target groups mentioned in particular, need to be educated as stated by the researcher in order to reduce or avoid further BBAs.

REFERENCES

African Journal of Emergency Medicine. 2011. Child survival in Africa – What can we do to improve it? Elsevier. 1. (Online). Available from: http://www.afjem.org/article/S2211-419X(13)00179-1/abstract (Accessed 6 March 2015).

Al-Amoudi, S. & Bahnassy, A.A. 1995. Maternal characteristics of deliveries before arrival to hospital in Bisha. Saudi Arabia. *Bahrain Medical Bulletin*, 17(2).

Alabi, A.A. O'Mahony, D. Wright, G. & Ntsaba, M.J. 2015. Why are babies born before arrival at the health facilities in King Sabata Dalindyebo Local Municipality, Eastern Cape, South Africa? A qualitative study, African Journal of Primary Health Care and Family Medicine, Vol 7(1).

Bassingthwaighte, M.K. & Ballot, D.E. 2013. Outcomes of babies born before arrival at a tertiary hospital in Johannesburg, South Africa. *South African Journal of Child Health*, Nov 2013, Vol 7(4):139-145.

Beeram, M., Solarin, K., Young, M. & Abedin, M. 1995. Morbidity and Mortality of Infants Born Before Arrival at the Hospital. *Clinical Paediatrics*. June 1995, Vol 34(6): 313-316.

Beukes, A. Mabasa, T. Mkhngo, L. Olivier, C. Ramoo, N. Dawadi, B.R. & Joubert, G. 2017. Women who give birth before arriving at National District Hospital in Bloemfontein, Free State. South African Family Practice 2017, 1(1):1–2.

Bhat, B.A., Suri, K. & Gupta, B. 2000. A Clinico-Epidemiological Evaluation of Infants Born Before Arrival at Hospital. *Annals of Saudi Medicine,* Sep-Nov 2000, Vol 20 (5-6) 483-484.

Bhoopalam, P.S. & Watkinson, M. 1991. Babies born before arrival at hospital. *British Journal of Obstetrics and Gynaecology,* 98: 57-64. (Online). Available from: https://www.ncbi.nlm.nih.gov/pubmed/1998633 (Accessed 7 July 2015).

Blondel, B., Drewniak, N., Pilkington, H. & Zeitlin, J. 2011. Out-of-hospital births and the supply of maternity units in France. Epidemiological Research Unit on Perinatal and Women's and Children's Health, Paris, France: 1170

Brink, H., Van der Watt, C. & Van Rensburg, G. 2012. Fundamentals of Research Methodology for Healthcare Professionals. 3rd Ed. Pretoria: Juta.

Census. 2011. Mangaung Metropolitan Municipality. (Online). Available from: https://census2011.adrianfrith.com/place/499 (Accessed 7 July 2015).

Chaudhary, P. 2005. Accidental-out-of-hospital deliveries: factors influencing delay in arrival to maternity hospital. *Kathmandu University Medical Journal,* 3(2): 115-122.

Chiragdin, T. 2013. Effect of Giving Birth Before Arrival (BBA) On Pregnancy Outcome Among Booked Mothers at Coast Provincial And General Hospital (CPGH).

Creswell, J.W. 2003. Research Design, Qualitative, Quantitative and Mixed Methods approaches. University of Nebraska, Lincoln. Sage Publications.

De Almeida, M.F., Alencar, G.P., Novaes, M.H.D., França Jr, I., Siqueira, A.A. Schoeps, D., Campbell, O. & Rodrigues, L. 2005. Accidental home deliveries in southern São Paulo, Brazil. *Rev Saude Publica,* 39(3): 336-75.

Fajemilehin, R.B. 1991. Factors influencing high rate of "born-before-arrival' babies in Nigeria – a case control study in Ogbomosho. *International Journal of Nursing Studies*, 28(1), 13-18.

Free State Department of Health, Annual Performance Plan, 2017/18.

Google images. 2017. Free State Municipalities. (On line). Available from: https://www.google.co.za/search?q=free+state+map+images&tbm=isch&source=iu&ictx=1&fir=kqBPKQWYRwOeEM%253A%252CcdredkXcTHSnBM%252C_&usg=__r_T-oBnaT9PlM6zTF8mQwm5qnkY%3D&sa=X&ved=0ahUKEwjG9KbPpITZAhVQFOwKHU-hCHAQ9QEIODAH#imgrc=8XEs_hss_3o42M: (Accessed 2 December 2017).

Gunnarsson, B. Smarason, A. Skogvoll, E. & Fasting, S. 2014. Characteristics and outcome of unplanned out-of-institution births in Norway from 1999 to 2013: a cross-sectional study. ACTA *Obstetricia et Gynecologica Scandanavica*, 93: 1003-1010.

Holy Bible. 2001. New International Version. Zondervan. United States of America.

Lazić, Z. & Takač, I. 2010. Outcomes and risk factors for unplanned delivery at home and before arrival to the hospital. *Wiener Klinische Wochenschrift,* Jan 2011, 123(1-2), 11-14.

McLelland, G. McKenna, L. & Archer, F. 2013. No fixed place of birth: unplanned BBAs in Victoria, Australia*. Midwifery,* 29(2), E19-25.

McLelland, G.E., McKenna, L.G., Morgans, A., Smith, K. 2018. Epidemiology of unplanned out-of-hospital births attended by paramedics. *BMC Pregnancy & Childbirth*, Vol 18, p1-9.

McLelland, G.E., Morgans, A., McKenna, L. 2014. Involvement of emergency medical services at unplanned birth before arrival to hospital: a structured review. *Emergency Medicine Journal*, 31(4):345-350.

Parag, N., McKerrow, N.H. & Naby, F. 2013. A profile of babies born before arrival to hospital in a peri-urban setting. *African Journal of Emergency Medicine*, 3(4): 521-522.

Parag, N., McKerrow, N.H. & Naby, F. 2014. Profile of babies born before arrival at hospital in a peri-urban setting. *South African Journal of Child Health,* May 2014. Vol 8(2): 45-49.

Pattinson, R.C. 2002. Challenges in Saving Babies - avoidable factors, missed opportunities and substandard care in perinatal deaths in South Africa. *South African Journal of Obstetrics and Gynaecology*, Vol 9(3).

Phiri, S.N., Fylkesnes, K., Ruano, A.L. & Moland, K.M. 2014. 'Born before arrival': user and provider perspectives on health facility childbirths in Kapiri Mposhi district, Zambia. *BioMed Central Pregnancy and Childbirth,* 14(323).

Pilkington, H., Blondel, B., Drewniak, N. & Zeitlin, J. 2014. Where does distance matter? Distance to closest maternity unit and risk of foetal and neonatal mortality in France. *European Journal of Public Health*, Dec 2014. 24(6): 904-909.

Pilkington, H., Prunet, C., Blondel, B., Charreire, H., Combier, E., Vaillant, M., Amat-Roze, J.M., Zeitlin, J. 2018. Travel time to hospital for childbirth. Comparing calculated versus reported travel times in France. *Maternal and Child Health Journal,* Jan 2018, 22(1):101-110.

Potter, P.C., Pelteret, R., Reynolds, Motala, L.A., Kibel, M.A. 1984. Born before arrival: a study at the New Somerset Hospital, Cape Town. *South Africa Medical Journal*, Sept 1984, Vol 66(10):377-380.

Ramsewak, S., Narayansingh, G. & Thomas, D. 1997. Born before arrival (BBA) in Trinidad - a seven-year case-control study. The University of the West Indies, Trinidad. *Journal of Obstetrics and Gynaecology*, 17(3): 242-244.

Schoon, M.G. 2013. Impact of inter-facility transport on maternal mortality in the Free State Province. SAMJ, 103 (8): 534 – 537.

Scott, T. 2005. Unplanned Out of Hospital Births - Who Delivers the Babies? *Medical Journal*, 98 (3):70-72.

Statistic South Africa. 2012. Mid-year population estimates. Pretoria: Government Printers.

Unterscheider, J., Ma'ayeh, M. & Geary, M.P. 2011 Born before arrival births: Impact of a changing obstetric population. *Journal of Obstetrics and Gynaecology*, 31.721-723.

Venter, A. & Schoon, M.G. 2015. Millennium Development Goals Summit. Free State Department of Health. South Africa.

Wagle, R., Sabroe, S. & Nielsen, B.B. 2004 Socioeconomic and physical distance to the maternity hospital as predictors for place of delivery: an observation study from Nepal. *BioMed Central*.

World Health Organisation (WHO) [2005:16-17] Millennium Development Goals (Online). Available from:
http://www.who.int/hdp/publications/mdg_en.pdf (Accessed 7 July 2015)

APPENDICES

APPENDIX A

INTERVIEW QUESTIONNAIRE

APPENDIX A

INTERVIEW QUESTIONNAIRE

IDENTIFYING THE TARGET GROUP FOR EDUCATION OUTREACH TO REDUCE BIRTHS BEFORE ARRIVAL IN MANGAUNG

INTERVIEW DATE: DD MM YYYY

FOR OFFICIAL USE D D M M Y Y (1 2 3 4 5 6)

PARTICIPANT

1 Participant Number: (7 8 9)

2 Delivery — Birth Before Arrival: 1 — Control – Normal Vaginal Delivery: 2 (10)

SOCIO-DEMOGRAPHIC VARIABLES

3 **Patient's exact Age (in Years)** (11 12)

4 **Marital Status**

Married	1
Single	2
Divorced	3
Widowed	4

(13)

5 **Ethnicity**

Black	1
Caucasian	2
Coloured	3
Indian/Asian	4
Other..... (Specify)	5

(14)

6 **Level of Education attained**

None		1
Primary	Grade: _____	2
Secondary	Grade: _____	3
University or College		4

(15)

7 **Occupation**

Unemployed	1
Employed	2
Self-employed	3

(16)

MATERNAL (AFTER DELIVERY)

8 Parity (17 - 18)
9 Gravidity (19 - 20)
10 Gestation at delivery _____ (Completed weeks) (21 - 22)
11 Number of Anetenatal Clinic visits (23 - 24)

12 When did the labour pain start?
Date: _____ (D D M M Y Y) (25 26 27 28 29 30)
Time: _____(AM/PM) (:) (31 - 34)

Date of Delivery : _____ (D D M M Y Y) (35 36 37 38 39 40)

Time of Delivery : _____(AM/PM) (:) (41 - 44)
Duration of labour: _____ Min/Hrs (:) (45 - 48)

13 **Decision to seek Medical Assistance for the delivery was taken.**

Yes	1
No	2

(49)

14 **By whom?**

Self	1
Parent	2
Husband/Partner	3
Other..... (Specify)	4

(50)

15 **Escorted to health facility**

None	1
Husband/Partner	2
Neighbour	3
Other..... (Specify)	4

(51)

16 **Was a Birth Attendant Present?**

Yes	1
No	2

(52)

17 **By whom was Delivery Done**

Skilled Health Care Personnel (EMS personnel, Midwife, Medical Doctor)	1
Traditional Carer	2
Self	3
Other..... (Specify)	4

(53)

18 **Place of Delivery**

Home	1	
Ambulance	2	
En route (to hospital)	3	
Maternity unit	4	
Other..... (Specify)	5	54

TRANSPORTATION

19 Mode of transportation

Ambulance	1	
Private vehicle	2	
Public (Taxi, Bus, etc.)	3	
Walk	4	55

20	What time did you call for transportation: _____		56 - 59
21	What time did the transport arrive? _____		60 - 63
22	How long did it take for transport to arrive: _____	Min/Hrs	64 - 67
23	Distance from home to health facility _____._____ (Using the patient's residential address)	Km	68 - 71
24	Closest maternity unit available at that time: _____._____	Km	72 - 75

	REASONS FOR BBA:	YES	NO		
	ANTENATAL	1	2		
25	Was the patient booked?				76
26	Did the patient know that she was pregnant?				77
27	Was the delivery facility identified?				78
28	Was the level of care determined?				79
29	Bypassed nearest maternity unit				80
30	High risk maternity unit				81
31	Expected mode of delivery known (NVD / CS)				82
32	Did the patient know that she was in labour?				83
33	Was it a precipitous labour (started and delivered quickly, i.e. labour occurred within 2 hours)?				84
	PREPAREDNESS				
34	Is the patient prepared for delivery?				85
35	Does the patient have basic supplies for the baby?				86
36	Does the patient have basic supplies for the mother?				87
	EDUCATION				
37	Did the patient know her exact gestation period?				88
38	Was she educated on signs and symptoms of labour?				89
39	Was the patient aware of signs of labour?				90
40	Were there physical Constraints (i.e. Unable to)?				91
41	Were there cognitive Constraints (i.e. not wanting to)?				92
42	Were there resource Constraints (i.e. lack of)?				93
43	Understands the risks of preterm labour?				94
44	Understands the risks of BBA?				95
45	Understands the complications of pregnancy?				96
46	Understands the importance of preparation?				97
47	Would antenatal preparation have helped prevent BBA?				98
48	Knows when to call for an ambulance?				99
49	Knows the correct number to call?				
	PERCEPTIONS LEADING TO BBA				
50	Previous delivery experience(s) at maternity unit was not good				100
51	Did NOT plan to deliver the baby at the maternity unit				101
52	Advised NOT to deliver the baby at the maternity unit				102
53	Had previous BBA(s)				103
54	Fear to use health facilities				104
55	Deliberately left it until too late				105
56	Staff attitudes				106
57	Physical abuse				107
58	Verbal abuse				108
59	Voluntary decisions				109
60	No airtime and could not call				110
61	Ambulance delay				111
62	Nothing for pain in hospital?				112
63	Traditional myth (on enduring pain, etc.)?				113
64	Sent home and told it's not time				114
65	Cost of preparing for hospital birth too high				115
66	No safety in hospital				116
67	No privacy				117
68	No confidentiality				118

	SOCIO-ECONOMIC FACTORS			
69	Preterm birth			119
70	Planned pregnancy			120
71	Pregnancy mis-timed			121
72	Pregnancy unwanted			122
73	Motivated by Social-grant			123

MATERNAL AND NEONATAL OUTCOMES

	ADVERSE MATERNAL OUTCOMES:	YES	NO	
74	**None**			124
75	Shock			125
76	Obstetric tears			126
77	Uterine atony			127
78	Retained placenta			128
79	Puerperal sepsis			129
80	Post-partum haemorrhage secondary			130
81	Death			131
82	Other..... (Specify)			132

	Interventions on mother upon admission to hospital	YES	NO	
83	Blood transfusion			133
84	Intravenous fluids			134
85	Antibiotics			135
86	Manual removal of placenta			136
87	Hysterectomy			137
88	Repair of tears			138
89	Other..... (Specify)			139

	Outcome of new-born (at the time of admission)	YES	NO	
90	Alive			140
91	Still Born			141
92	Died after delivery			142

93 Birth weight .....g Kg [ ] [ ] 143 - 146

94	Baby's Apgar score	1 min		
	Activity			
	Pulse			
	Grimace			
	Appearance			
	Respitation			
	Total			147 - 148

95 **Admission to NICU / Nursary**

Yes [1] NO [2] [ ] 149

		YES	NO	
96	Prematurity			150
97	Birth asphyxia			151
98	Sepsis			152
99	Hypoglycaemia			153
100	Respiratory distress			154
101	Hypothermia			155
102	Other..... (Specify)			156

103 What are the things that you would have liked to know around planning and preparation before giving birth? [ ] [ ] 157 - 158 [ ] [ ] 159 - 160

_____

_____

_____

104 What would have been a suitable way to prepare you not to have a BBA? [ ] [ ] 161 - 162 [ ] [ ] 163 - 164

_____

_____

105 Would you consider using traditional remedies to speedup the labour process? [ ] [ ] 165 - 166 [ ] [ ] 167 - 168

_____

_____

Thank you for your participation - Dankie dat u deel geneem het - Ke a leboha ha o nkile karolo

APPENDIX B

INVITATION TO PARTICIPATE IN THE RESEARCH PROJECT

APPENDIX B

INVITATION TO PARTICIPATE IN THE RESEARCH PROJECT

Dear Participant

INVITATION TO PARTICIPATE IN THE RESEARCH PROJECT

I am an Emergency Care Practitioner and have registered for a structured Masters' degree in Health Professions Education in the Faculty of Health Sciences at the University of the Free State, for which I must conduct a research study related to Health Professions Education.

The title of my research project is: **"IDENTIFYING THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG"**

The purpose of this study is to investigate the causes of births before arrival (BBAs) in order to identify the target groups for the educational outreach to reduce the number of births before arrival (BBAs) at the health facilities in the Mangaung area.

I hereby request your participation in this research study which is strictly voluntary, the information is required to determine the reasons why babies are born before arrival at the health facilities. If you agree to participate in this study you will be expected to answer questions from the data collection tool which would be administered by the researcher/assistant.

Please be advised of the following regarding participation:

1. To participate in this research is entirely voluntary.
2. All questions must be answered as honestly as possible.
3. It will in no way hold any adverse consequences which will affect your treat or obstetric care.
4. You will in no way be compensated for you participation and there is no costs involved on your side.
5. No names will be mentioned on the data collection or in the results.
6. I understand that approval for this research is through the University of the Free State, Faculty of Health Sciences and any problems or questions regarding the subject, the Institution may be contacted.

    Ms. M Marais
    The Chairperson: Health Sciences Research Ethics Committee
    Block D, Room 117
    François Retief Building PO Box 339 (G40)
    Faculty of Health Sciences University of the Free State
    Bloemfontein 9300
    Tel: (051) 40521812

The findings of this research will be written up and published as the proposed study will contribute significantly to the education of pregnant mothers and to addressing causes of BBAs through education and provide inputs to some areas of the Millennium Development Goals 4 and 5. If you require any further information or clarity, feel free to contact the researcher.

Thanking you in advance.

Yours faithfully,
Sidney Dywili

Student number: 1999193764
Master's student in Health Professions Education
University of the Free State
Contact Details: Cell nr: 072 867 45 43; DywiliSTI@fshealth.gov.za & Sidney.dywili@gmail.com

Vir Afrikaanssprekende respondente:

20 Junie 2015

Geagte Deelnemer

U WORD GEVRA OM DEEL TE NEEM AAN N NAVORSINGSPROJEK

Ek is ’n nooddienspraktisyn en geregistreer vir ’n Meestersgraad in Gesondheidsberoepe-onderwys aan die Universiteit van die Vrystaat en moet as deel hiervan ’n navorsingstudie aanbied.

Die titel van my navosingstudie is: **“IDENTIFYING THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG”**

(Identifisering van die teikengroep vir verdere opvoeding om die voorkoms van geboorte voor aankoms by die hospitaal in die Mangaung area te verminder)

Die doel van hierdie studie is om te ondersoek wat veroorsaak dat babas gebore word voor die moeder by die hospitaal aankom in die Mangaung area ten einde n teikengroep te identifiseer wat verdere opvoeding hieroor moet ontvang. U is volgens sekere insluitingskriteria geregtig daarop om deel te neem aan hierdie navorsingsstudie.

Ek verklaar hiermee dat alle persoonlike inligting wat deur u gedurende hierdie onderhoud verskaf word met die nodige professionele omsigtigheid en vertroulikheid hanteer sal word en nie met enige derde party, buiten die studieleier (indien nodig) bespreek sal word nie. Daar sal geen melding van deelnemers se name in die navorsingsverslag gemaak word nie. 'n Numeriese koderingstelsel sal gebruik word om die vertroulikheid van u antwoorde te verseker. Name of persoonlike identifiseerders sal nie op die datavelle wat vir statistiese analise gestuur word, verskyn nie. Dit sal waardeer word indien u nie u response bespreek met enige derde party gedurende die tydperk waartydens die onderhoude gehou word nie, om 'n getroue weerspieëling van respondente se persoonlike opinies te verkry en die geldigheid van die navorsingsresultate so hoog as moontlik te probeer hou.

Die gevolgtrekkings en uitkomste van hierdie studie al gepubliseer word and sal bydra tot kennis rakende die Millenniumontwikkelingsdoelwitte 4 en 5.

Etiese klaring om voort te gaan met hierdie studie is deur die Universiteit van die Vrystaat verskaf. U is welkom om navrae te rig aan die Geneeskundige Etiekkomitee by die volgende adres:

Mev. M Marais
Voorsitter: Etiekkomitee
Blok D, Kamer 117
François Retief-gebou Posbus 339 (G40)
Universiteit van die Vrystaat, Bloemfontein 9300
Tel: (051) 40521812.

Daar is by sekere vrae die geleentheid vir u om kommentaar te lewer of om uit te brei op u antwoord.

Vriendelike groete

Sidney Dywili
Studentenommer: 1999193764
Meestersgraadstudent in Gesondheidsberoepe-onderwys
Universiteit van die Vrystaat
Sel. Nommer: 072 867 45 43
E-posadres: DywiliSTI@fshealth.gov.za and Sidney.dywili@gmail.com

Monka karolo ya buang Sesotho

20 Phuptjane 2015

Monka karolo

SEMEMO SA HO NKA KAROLO PROJEKENG YA RESECHE

Ke mosebeletsi wa lefapha la bophelo bo botle ya fanang ka thuso ya potlako, mme ke ingodiseditse lengolo la “structured Master’s degree in Health Professions Education” le fapheng la bophelo le saense Univesiting ya Foreisetata moo tlamehang ho etsa diphuputso mabapi le Thuto ya basebeletsi ba tsa bophelo bo botle.

Sehlooho sa projeke ya ka ya reseche ke: **“IDENTIFYING THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG”**

Ho fuputsa ho re thuto e lebiswe hlopheng se feng, ho leka ho fokotsa sekgahla le sesosa sa ho tsalwa ha bana pele moimana a fihla sepetlele”.

Maikemisetso a diphuputso tsena ke ho fumana sesosa sa ho tsalwa ha bana pele moimana o fihla sepetlele mona Mangaung. Bakeng sa ho fumantsha ditsela tseo thuto e ka lekang ho fokotsa sekgahla sa ketsahalo ena.

Ke kopa ho re o nke karolo diphuputsong tsena ka ho ithatela ntle le qobello, mme tsebo ea hlokahala ho tseba sesosa se bakang hore bana ba hlahe pele motswadi a fihla sepetlele. Ha o dumela ho nka karolo diphuputsong tsena ho tla hlokahala ho re o arabe dipotso tse mmalwa tse tla botsa ke mofuputsi kapa mothusi wa hae.

Hlokomela dintho tse latelang mabapi le phuputso e na:

1. Ha o qobellwe ho nka karolo diphuputsong.
2. O tlameha ho re o fane ka karabo tsa nne bakeng sa dipotso tsohle.
3. Ho ke kebe ha e ba le ditlamorao ho okweng ha hao.
4. Ha ho na teefo bakeng sa ho nka karolo.
5. Lebitso la hao le ke ke la sebediswa diphuputsong tsena.
6. Ke utlwisisa ho re tumello ya ho tswela pele ka diphuputso tsena etswa Univesiting ya Foreisitata, lefapheng la tsa bophelo bo botle le saense. Ha o hloka tlhakisetso o ka lebisa dipotso mabapi le diphuputso tsena lefapheng ho:

   Mme M Marais
   Modula setulo wa Komiti ya Ethics Block D, Room 117
   François Retief Building PO Box 339 (G40)
   Faculty of Health Sciences University of the Free State
   Bloemfontein 9300
   Tel: (051) 40521812.

Diphumantsho tsa diphuputso tsena di ka ngolwa le ho phatlalatswa ka ha diphuputso tsena di bohlokwa dithutong tsa batswetse le ho leka ho phekola sesosa sa ho tswalwa ha bana pele batswetse ba fihla sepetlele. Tsena di tla fihlellwa ka tsela ya thuto le ho fanaka dintlha tsa thuto ho Millennium Development Goals 4 and 5.

Ha o hloka tlhakisetso e fetang e na o ka letsetsa mofuputsi.

Ka tlhompho e kgolo,

Sidney Dywili
Student number: 1999193764
Magister student in Health Professions Education
University of the Free State
Contact Details: Cell number: 072 867 45 43
E-mail address: DywiliSTI@fshealth.gov.za and Sidney.dywili@gmail.com

APPENDIX C

CONSENT FOR PARTICIPATION IN THE RESEARCH STUDY

APPENDIX C

CONSENT FOR PARTICIPATION IN THE RESEARCH STUDY

I volunteer to participate in the research study conducted by Sidney Dywili from the University of the Free State. I fully understand that the study is designed to gather information about causes of births before arrival (BBAs) at the health facility with the intention of identifying the target groups for the educational outreach to reduce BBAs, and I will be one of the participants that will be interviewed and information from my hospital records will also be checked for verification.

1. My participation in this study is voluntary and I will not be paid for participation.
2. I have the right to withdraw, discontinue or decline from participating at any time and will not be mistreated or punished in any way.
3. Participation will take approximately 30 – 45 minutes.
4. I understand that my identity will not be revealed in this study and my personal information will be kept anonymous and confidential.
5. Precaution will be taken that my individual comments or answers in the questionnaire not be of any negative repercussions.
6. I understand that approval for this research is through the University of the Free State, Faculty of Health Sciences and any problems or questions regarding the subject the Institution may be contacted.

   Ms. M Marais
   The Chairperson: Ethics Committee
   Block D, Room 117
   François Retief Building PO Box 339 (G40)
   Faculty of Health Sciences University of the Free State
   Bloemfontein 9300
   Tel: (051) 40521812

7. I have read, understand and am satisfied with the explanation provided to me, and voluntarily agree to participate in this research study.
8. A copy of this consent form has been given to me.

_____ _____
Participant Signature Date

_____
Sidney Dywili
Student number: 1999193764
Master's student in Health Professions Education
University of the Free State

Contact Details:
Cell number: 072 867 45 43
E-mail address: DywiliSTI@fshealth.gov.za and Sidney.dywili@gmail.com

TOESTEMMING VIR DEELNAME AAN DIE NAVORSING

Ek neem vrywillig deel aan die navorsingstudie uitgevoer deur Sidney Dywili van die Universiteit van die Vrystaat. Ek verstaan dat die studie ontwerp is om inligting oor die oorsake van geboortes voor aankoms by die hospitaal te ondersoek. Ek gee toestemming om een van die deelnemers te wees wat ondervra sal word, en dat die inligting in my hospitaal rekords mag nagegaan word.

1. My deelname aan hierdie studie is vrywillig en ek sal nie betaal word vir deelname.
2. Ek het die reg om te onttrek, staak of deelname weier ten enige tyd sonder gevolge.
3. Deelname sal ongeveer 30-45 minute neem.
4. Ek verstaan dat my identiteit sal nie openbaar gemaak word in hierdie studie nie en my persoonlike inligting sal anoniem en vertroulik gehanteer word.
5. Voorsorg sal getref word dat my individuele kommentaar of antwoorde in die vraelys nie enige negatiewe gevolge sal hê nie.
6. Ek verstaan dat goedkeuring vir hierdie navorsing toegestaan is deur die Universiteit van die Vrystaat, Fakulteit Gesondheidswetenskappe en enige probleme of vrae aan die instelling gerig kan word.

Me M Marais
Die Voorsitter: Etiekkomitee
Blok D, Kamer 117
François Retief-gebou Posbus 339 (G40)
Fakulteit Gesondheidswetenskappe
Universiteit van die Vrystaat
Bloemfontein
9300
Tel: (051) 40521812

7. Ek het bogenoemde gelees, verstaan en is tevrede met die verduideliking wat aan my verskaf is, en stem vrywillig in om deel te neem aan hierdie navorsingstudie.
8. 'n Afskrif van hierdie toestemmingvorm is aan my gegee.

_____ _____
Handtekening van deelnemer Datum

_____
Sidney Dywili
Studentenommer: 1999193764
Meestergraadstudent in Gesondheidberoepe-onderwys
Universiteit van die Vrystaat
Selnommer: 072 867 45 43
E-posadres: DywiliSTI@fshealth.gov.za en Sidney.dywili@gmail.com

TUMELLO YA HO NKA KAROLO DIPHUPUTSONG TSA RESECHE

Ke nka karolo ka ho ithatela ntle le qobello diphuputsong tsa reseche e etsuwang ke Sidney Dywili wa Yunivesiti ya Foreisetata. Ke utlisisa hantle ho re diphuputso tsena di etsetswa ho fumntsha sesosa se bakang hore bana ba hlahe pele motswetsi a fihla sepetlele. Ke tla e ba e mong wa ba nka karolo diphuputsong mme ke fana ka tumello ho mofuputsi ho ka lekola tseding tsa dintlha direkotong tsa ka tsa sepetlele.

1. Ke nka karolo ka ho ithatela ntle le qobello mme ha ke a labella teefo bakeng sa ho nka karolo.
2. Ke na le tokelo ya ho ka hana ho nka karolo kapa ho itokolla ka nako e fe kapa e fe ntle le ditlamorao.
3. Diphuputso tsena di tla nka metsotso e ka bang 30 – 45.
4. Ke a utlwisisa hore lebitso laka le ke ke la phatlalatswa mme sohle saka se tla bolokwa e le sephiri.
5. Ho tla nkuwa mehato ho boloka dikarabo tsa ka e le sephiri le ho re di sebe le ditlamorao tse sa lokang.
6. Ke utlwisisa ho re tumello ya ho tswela pele ka diphuputso tsena etswa Univesiting ya Foreisitata, lefapheng la tsa bophelo bo botle le saense. Ha o hloka tlhakisetso o ka lebisa dipotso mabapi le diphuputso tsena lefapheng ho:

   Mmme M Marais
   Modula setulo wa Komiti ya Ethics
   Block D, Room 117
   François Retief Building PO Box 339 (G40)
   Faculty of Health Sciences University of the Free State
   Bloemfontein 9300
   Tel: (051) 40521812.
   Tel: (051) 40521812.

7. Ke utlisisa tlaloso le tlhakisetso bakeng sa ho nka karolo ka ho ithatele mm eke sa qobelle diphuputsong tsena tsa reseche.
8. Ke fuwe copy ya tumello ena.

_____ _____

Monka karolo a tekene Letsatsi

_____

Sidney Dywili
Student number: 1999193764
Magister student in Health Professions Education
University of the Free State

Contact Details:
Cell number: 072 867 45 43
E-mail address: DywiliSTI@fshealth.gov.za and Sidney.dywili@gmail.com

APPENDIX D

EVIDENCE OF PERMISSION FROM HEAD OF THE DEPARTMENT OF HEALTH TO EXECUTE THE STUDY

APPENDIX D

EVIDENCE OF PERMISSION FROM HEAD OF THE DEPARTMENT OF HEALTH TO EXECUTE THE STUDY

Dr. D. Motau
Head: Health
Bophelo House
Cnr. Harvey & Charlotte Maxeke Street
Bloemfontein
9300

REQUEST FOR APPROVAL TO PERFORM A RESEARCH PROJECT AND COLLECT DATA FROM NATIONAL DISTRICT HOSPITAL TO IDENTIFY THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG

1. **PURPOSE**

To obtain approval to perform a research project and collect data from National District Hospital to investigate causes births before arrival (BBAs) in order to identify the target groups for the educational outreach to reduce BBAs in Mangaung.

2. **BACKGROUND / MOTIVATION**

I am an Emergency Care Practitioner and have registered for a structured Master's degree in Health Professions Education in the Faculty of Health Sciences at the University of the Free State, for which I must conduct a research study related to Health Professions Education.

The title of my research project is: **"IDENTIFYING THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG"**

My supervisor is:

Prof. W.J. Steinberg, Division of Family Medicine, Faculty of Health Sciences at the University of the Free State.

The purpose of this study is to identify the causes and contributing factors of BBAs in the Mangaung area in order to identify the target groups for the educational outreach to reduce this occurrence.

The researcher would strive to establish the following:

1. Causes and outcomes of BBAs in Mangaung area?
2. Contributing factors leading to mothers ending up with BBAs?
3. Recommendations for the target groups for the educational outreach to reduce BBAs and hopefully prevent the unnecessary loss of life.

The findings of this research will be written up and published as the proposed study will contribute significantly to the education of health personnel and to addressing causes of BBAs through education and provide inputs to some areas of the Millennium Development Goals 4 and 5.

With this letter I beseech you to grant me permission to continue with this research project and to collect the data required for this study as approved by the Ethics Committee. (Faculty of Health Sciences – ECUFS Nr. 212/2015).

Alternatively, should you have any questions regarding the ethical aspects of the study, you can also contact the chairperson of the UFS Research Ethics Committee, Ms M Maree, Block D, Room 117, François Retief Building PO Box 339 (G40) Faculty of Health Sciences University of the Free State Bloemfontein 9300 Tel: (051) 40521812.

Thanking you in advance.

Yours faithfully,

Sidney Dywili
Student number: 1999193764
Magister student in Health Professions Education
University of the Free State

Contact Details:
Cell number: 072 867 45 43
E-mail address: DywiliSTI@fshealth.gov.za and Sidney.dywili@gmail.com

1. RECOMMENDATION

It is recommended that approval be granted for Sidney Dywili to conduct a research study and collect data from National District Hospital to identify the target group for the educational outreach to reduce Births Before Arrival (BBAs) in the Mangaung area"

RECOMMENDED BY:	**APPROVED / ~~NOT APPROVED~~/ APPROVED AS AMENDED**
Ms. B. Ramodula CEO: National District Hospital Date: 2016-05-17	Dr. D. Mpiti Head: Health Date: 20/05/2016

APPENDIX E

EVIDENCE OF THE APPROVAL GRANTED BY THE PRINCIPAL OF THE FREE STATE COLLEGE OF EMERGENCY CARE TO EXECUTE THE STUDY

APPENDIX E

EVIDENCE OF THE APPROVAL GRANTED BY THE PRINCIPAL OF THE FREE STATE COLLEGE OF EMERGENCY CARE TO EXECUTE THE STUDY

20 June 2015

Mr Kevin Rowe-Rowe
Free State College of Emergency Care
7 Roth Avenue
Bloemfontein
9300

Dear Mr Kevin Rowe-Rowe

REQUEST FOR APPROVAL TO PERFORM A RESEARCH PROJECT AND COLLECT DATA FROM NATIONAL DISTRICT HOSPITAL TO IDENTIFY THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG

1. **PURPOSE**

To obtain approval to perform a research project and collect data from National District Hospital to investigate causes births before arrival (BBAs) in order to identify the target groups for the educational outreach to reduce BBAs in the Mangaung area.

2. **BACKGROUND / MOTIVATION**

I am an Emergency Care Practitioner and have registered for a structured Master's degree in Health Professions Education in the Faculty of Health Sciences at the University of the Free State, for which I must conduct a research study related to Health Professions Education.

The title of my research project is: **"IDENTIFYING THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG"**

My supervisor is:

Prof. W.J. Steinberg, Division of Family Medicine, Faculty of Health Sciences at the University of the Free State.

The purpose of this study is to identify the causes and contributing factors of BBAs in the Mangaung area in order to identify the target groups for the educational outreach to reduce this occurrence.

The researcher would strive to establish the following:

1. Causes and outcomes of BBAs in Mangaung area?
2. Contributing factors leading to mothers ending up with BBAs?
3. Recommendations for the target group's for the educational outreach to reduce BBAs and hopefully prevent the unnecessary loss of life.

The findings of this research will be written up and published as the proposed study will contribute significantly to the education of health personnel and to addressing causes of BBAs through education and provide inputs to some areas of the Millennium Development Goals 4 and 5.

With this letter I beseech you to grant me permission to continue with this research project and to collect the data required for this study as approved by the Ethics Committee. (Faculty of Health Sciences – ECUFS Nr. 212/2015).

Alternatively, should you have any questions regarding the ethical aspects of the study, you can also contact the chairperson of the UFS Research Ethics Committee, Ms M Marais, Block D, Room 117, François Retief Building PO Box 339 (G40) Faculty of Health Sciences University of the Free State Bloemfontein 9300 Tel: (051) 40521812.

Thanking you in advance.

Yours faithfully,

Sidney Dywili
Student number: 1999193764
Master's student in Health Professions Education
University of the Free State

Contact Details:
Cell number: 072 867 45 43
E-mail address: DywiliSTI@fshealth.gov.za and Sidney.dywili@gmail.com

1. RECOMMENDATION

It is recommended that approval be granted for Sidney Dywili to conduct a research study and collect data from National District Hospital to identify the target groups for the educational outreach to reduce Births Before Arrival (BBAs) in Mangaung**.**

APPROVED / NOT APPROVED/ APPROVED AS AMENDED
Mr Kevin Rowe-Rowe Principal: Free State College of Emergency Care _____ Date: ……..

APPENDIX F

EVIDENCE OF THE FACULTY OF HEALTH SCIENCES RESEARCH ETHICS COMMITTEE GRANTING PERMISSION TO EXECUTE THE STUDY

APPENDIX F

EVIDENCE OF THE FACULTY OF HEALTH SCIENCES RESEARCH ETHICS COMMITTEE GRANTING PERMISSION TO EXECUTE THE STUDY

Ms M. Marais
The Chairperson: Ethics Committee
Block D, Room 117
François Retief Building
School of Medicine
Faculty of Health Sciences
University of the Free State

REQUEST FOR APPROVAL TO PERFORM A RESEARCH PROJECT AND COLLECT DATA FROM NATIONAL DISTRICT HOSPITAL TO IDENTIFY THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG

PURPOSE

To obtain approval to perform a research project and collect data from National District Hospital to investigate causes births before arrival (BBAs) in order to identify the target groups for the educational outreach to reduce BBAs in the Mangaung area.

BACKGROUND / MOTIVATION

I am an Emergency Care Practitioner and have registered for a structured Master's degree in Health Professions Education in the Faculty of Health Sciences at the University of the Free State, for which I must conduct a research study related to Health Professions Education.
The title of my research project is:

"IDENTIFYING THE TARGET GROUPS FOR THE EDUCATIONAL OUTREACH TO REDUCE BBAs IN MANGAUNG"

My supervisor is:

Prof. W.J. Steinberg, Division of Family Medicine, Faculty of Health Sciences at the University of the Free State.

The purpose of this study is to identify the causes and contributing factors of BBAs in the Mangaung area in order to identify the target groups for the educational outreach to reduce this occurrence.

The researcher would strive to establish the following:

- Causes and outcomes of BBAs in Mangaung area?
- Contributing factors leading to mothers ending up with BBAs?
- Recommendations for the target groups for the educational outreach to reduce BBAs and hopefully prevent the unnecessary loss of life.

The findings of this research will be written up and published as the proposed study will contribute significantly to the education of health personnel and to addressing causes of BBAs through education and provide inputs to some areas of the Millennium Development Goals 4 and 5.

With this letter I beseech you to grant me permission to continue with this research project and to collect the data required for this study as approved by the Ethics Committee. (Faculty of Health Sciences – ECUFS Nr. 212/2015).

Alternatively, should you have any questions regarding the ethical aspects of the study, you can also contact the chairperson of the UFS Research Ethics Committee, Ms M Marais, Block D, Room 117, François Retief Building PO Box 339 (G40) Faculty of Health Sciences University of the Free State Bloemfontein 9300 Tel: (051) 40521812.

Thanking you in advance.

Yours faithfully,

Sidney Dywili
Student number: 1999193764
Magister student in Health Professions Education
University of the Free State

Contact Details:
Cell number: 072 867 45 43
E-mail address: DywiliSTI@fshealth.gov.za and Sidney.dywili@gmail.com

RECOMMENDATION

It is recommended that approval be granted for Sidney Dywili to conduct a research study and collect data from National District Hospital to identify the target groups for the educational outreach to reduce Births Before Arrival (BBAs) in the Mangaung area**"**

APPROVED / NOT APPROVED/ APPROVED AS AMENDED
Ms M. Marais The Chairperson: Ethics Committee _____ Date: ……..