

**THE PREVALENCE OF OBSTRUCTED LABOUR AMONG PREGNANT WOMEN AT
A SELECTED HOSPITAL, WEST WOLLEGA, ETHIOPIA**

by

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DECLARATION

I declare that **THE PREVALENCE OF OBSTRUCTED LABOUR AMONG PREGNANT WOMEN AT A SELECTED HOSPITAL, WEST WOLLEGA, ETHIOPIA** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by mean of complete references.

Signature: 
(Johannes Pieter Kip)

Date: May 30, 2013

THE PREVALENCE OF OBSTRUCTED LABOUR AMONG PREGNANT WOMEN AT A SELECTED HOSPITAL, WEST WOLLEGA, ETHIOPIA

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ABSTRACT

Obstructed labour contributes significantly to the morbidity and mortality among both mothers and babies in Ethiopia nationwide, and also in the West-Wollega region where this study was conducted. The researcher used a retrospective hospital based review of maternity files to quantify the problem of obstructed labour in the selected hospital. The findings revealed that maternal and perinatal mortality due to obstructed labour amounted to 1.4% and 7.5% respectively. Most of these complications could be prevented by proper antenatal care and careful attentive monitoring during delivery with proper use of the partogram which will indicate the occurrence of complications in good time when successful and life saving interventions are still available.

The findings clearly show that poor documentation in general and very sporadic usage of the partogram in particular contributes significantly to the complications for mother and child. Re-introduction of proper documentation and careful use of the partogram are advocated.

Key concepts

Obstructed labour, maternal and perinatal mortality, poor obstetrical outcome, documentation in medical practice, usage of partogram, preventable deaths.

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- The patients and staff members of the selected hospital without whom no study could have been conducted.
- All the expectant mothers, young and old, who with courage and persistence continue to conceive and give birth, despite the odds against them.

Dedication

I dedicate this study to my dear wife Esther who is my life companion and who through the advancement of her own education also has provided me with an enormous stimulus to undertake a Master Degree study in Public Health at a mature age and after a curative medical career of 30 years.

Thereby she has assisted me to finally arrive at a more balanced view of the art and practice of Medicine.

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List of abbreviations

ANC	Antenatal clinic
BEMOnC	Basic Emergency Obstetric and Neonatal Care
CEMOnC	Comprehensive Emergency Obstetric and Neonatal Care
CFR	Case Fatality Rate
CPD	Cephalo Pelvic Disproportion
C/S	Caesarean Section
CSA	Central Statistical Agency (Ethiopia)
DF	Degrees of Freedom (in statistical significance calculations)
EDHS	Ethiopian Demographic and Health Survey
GA	Gestational Age
HSDP	Health Sector Development Plan
KM	Kilometre
LSCS	Lower Segment Caesarean Section
MDG	Millennium Development Goal
MOH	Ministry of Health
OR	Operating Room
SSA	Sub-Saharan Africa
SPSS	Statistical Package for the Social Sciences
UNFPA	United Nations Population Fund
USD	United States Dollar
TBA	Traditional Birth Attendant
WHO	World Health Organization

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Globally, for several decennia, the health of both pregnant women as well as of their unborn babies has been and still is a reason for concern and international attention. According to the World Health Report (WHO 2005:10), pregnancy and childbirth and their consequences are still the leading causes of death, disease and disability among women of reproductive age in developing countries more than any other single health problem. The report further states that over 300 million women in the developing world currently suffer from short- or long-term illnesses brought about by the complications of pregnancy and childbirth.

Neilson, Lavender, Quenby and Wray (2003:191) indicated that each year, 210 million women become pregnant, of whom 20 million experience pregnancy-related illness and 500,000 die as a result of the complications of pregnancy or childbirth. Although the knowledge to substantially improve the maternal and child health has been available and affordable for several decades, the accomplishment of such desirable goals has not yet been achieved (Ban 2010:2, 3; Say & Raine 2007:812). In Sub-Saharan Africa (SSA) the indicators that address the well being of mothers and children leave much to be desired.

Worldwide it is accepted that the achievement of the MDG's in general depends on the success of attaining the goals for maternal health (Ban 2010:4; UNFPA 2010:8, 9). The gains and benefits for the women and their families, as well as a nation as a whole, are substantial and go far beyond the avoidance of mortality and disabilities of the concerned women (UNFPA 2007:11). Improving maternal health and reducing maternal mortality and morbidity have been key concerns of several international summits and conferences since the late 1980s, including the Millennium Summit in 2000 (WHO 2005:6).

The African continent is lagging furthest behind in the attainment of the MDG's 4 and 5 that articulate the objectives of reducing child and maternal mortality by two thirds and 75% respectively by the year 2015 (WHO, UNICEF, UNFPA and the World Bank 2010:2, 22). The chance that a woman might die during her lifetime of a pregnancy related cause mostly depends on her place of birth and residence. For example, in the SSA region, that probability is 1 in 31, whereas in the developed regions that likelihood will only be 1 in 4,300 (UNFPA 2011:vii). For an Ethiopian woman that chance is even estimated at 1 in 14 (World Vision Canada [s.a]:2).

1.2 THE BACKGROUND TO THE RESEARCH PROBLEM

The major direct causes of maternal morbidity and mortality include haemorrhage, infection, high blood pressure (pre-eclampsia and eclampsia), unsafe abortion, and obstructed labour (WHO 2012:15; Kahn, Wojdyla, Say, Gülmezoglu & Van Look 2006:1068; Abdella 2010:115, 116; Koblinsky, Tain & Tesfaye 2010:7). Obstetric complications can and do arise mostly unexpectedly in about 15% of all pregnancies, and some of them might be life threatening (WHO, UNFPA, UNICEF and the World Bank 2007b:v).

1.2.1 Prevalence of obstructed labour

Neilson et al (2003:192-193) pointed out that obstructed labour is a key cause of maternal deaths in communities in which under-nutrition in childhood is common, resulting in small pelvises in women. Lack of easy access to well functioning health facilities with the capability of carrying out operative deliveries is another contributing cause. The reports state that in many countries maternal mortality due to obstructed labour is almost as prevalent today as it was more than 30 years ago. The number of maternal deaths as a result of obstructed labour or rupture of the uterus varies between 4% and 70% of all maternal deaths, amounting to a maternal mortality rate as high as 410/100,000 live births.

A traumatic delivery affects both mother and child. Maternal mortality from obstructed labour is largely the result of ruptured uterus or puerperal infection, whereas perinatal mortality is mainly due to asphyxia. Considerable maternal morbidity is associated with prolonged labour, since both post-partum haemorrhage and infection are more common

in women with long lasting labour. Obstetric fistulas are long-term complications of obstructed labour (Dolea & AbouZahr 2003:3).

In Ethiopia the incidence or prevalence of obstructed labour is estimated between 3.3 and 12.2% as observed in different studies from across the country (Gessesew & Mesfin 2003:175, 176; Shimelis, Hailemariam & Fessahaye 2010:145-146) but the contribution to maternal (as well as perinatal) mortality is labelled as major (Gessesew & Mesfin 2003:175; Koblinsky et al 2010:5-7).

1.2.2 Theoretical framework

Thaddeus and Maine (1994:1091) developed a conceptual framework called the Three Delay Model. This model identifies individual decision making, access to affordable services, and the provision of skilled attendance as the three main factors which can delay access to effective interventions to prevent maternal mortality.

In the first phase, the initial delay takes place when the mother in labour and her care takers do not recognise the need and urgency for professional assistance when the delivery process is not developing in a favourable manner. This error of judgement can be caused by a series of socio-cultural, economic factors as well as the perceived benefits of health care seeking behaviour (Say & Raine 2007:814-815; WHO 2006a:10).

According to Duffy (2007:123), a delay in seeking and reaching appropriate care relates directly to the issue of access. It encompasses factors within the family and in the community, including a woman's status, health care costs and distance from health facilities and transportation (Yohannis 2013:14, 24). In Gimbie, communities have little knowledge of life-threatening pregnancy complications and, even when a complication is recognised, the costs of medical treatment may discourage attendance at health facilities (Duffy 2007:123).

The second postponement occurs when the decision to take the mother to a health care facility has been taken but the transport consumes time, and too many precious instants are lost (Thaddeus & Maine 1994:1091). In Gimbie most of the population lives in villages located many kilometres from the selected hospital, with no proper road transport and muddy, mountainous terrain has to be crossed. Oftentimes, women are

carried to hospital on improvised stretchers, a journey that can last many hours. It is not uncommon for women to remain at home, in labour, for 3 or 4 days before seeking medical care, with a resulting high rate of foetal death and ruptured uterus (Duffy 2007:123).

Finally, the third hold-up is caused at the health facility where the right and urgently needed decision for active intervention is not made soon enough, or the expertise and equipment for the successful intervention are not available (Thaddeus & Maine 1994:1091). The delay in receiving high-quality care at health facilities relates to the number and skills of health professionals and the availability of equipment and drugs for emergency obstetric care. These are particularly challenges in resource-poor countries. Ethiopia has a shortage of health professionals at all levels, including doctors, nurses and midwives, and poor clinical governance processes to monitor standards of health care (Duffy 2007:124).

The interplay of these three delays can cause disastrous outcome for mother and child (Thaddeus & Maine 1994:1092; Human Rights Centre, University of Essex [s.a.]:8).

One of the most important ingredients for a successful obstetric result for mother and baby depends on the health care system's capacity to provide the necessary care locally as well as the possibility of timely referral in case such a need arises. To have access to such services the women have to attend antenatal clinics (ANCs): unfortunately the poor and uneducated women, especially in rural areas have little chance to utilise such facilities. In Ethiopia only 28% of pregnant mothers attend ANC once, a fully covered pregnancy with at least 4 antenatal visits occurs only in 12% of the nation's pregnancies (WHO and UNICEF 2010:86).

Among mothers in rural Ethiopia only 4% have professional obstetric care during their delivery (CSA [Ethiopia] and Measure DHS, ICF Macro 2012:14). There is a serious mismatch in distribution of midwives according to the regions where they are most needed due to problems of lack in motivation, insufficient compensation and the severe challenge to retain the health professionals in their positions in the (rural) communities. This is called the "triple gap" (UNFPA 2011:V-VII) of the availability of (1) *competence* – not enough fully qualified midwives,(2) *coverage* – some regions have severely inadequate levels of staffing and (3) *access* – the distances for many women to reach

the health facilities are simply prohibitive. This triple gap is especially desperately felt in the rural areas (Rosenfield, Min & Freedman 2007:1397).

1.3 STATEMENT OF THE RESEARCH PROBLEM

Despite the fact that obstructed labour in Ethiopia seems to be a common cause of maternal and perinatal morbidity and mortality, there is lack of research evidence to substantiate this.

1.4 DEFINITIONS OF KEY CONCEPTS

This section provides the definitions for several of the technical obstetrical concepts used in the study. These were:

Apgar score

This is an assessment of the baby's condition right after birth, at 1, 5 and 10 minutes, by evaluating the 5 indicators: **A**ppearance (colour), **P**ulse (heart rate), **G**rimace (response to stimuli), **A**ctivity (muscle tone) and **R**espiration (breathing rate) (Fraser & Cooper 2009:755, 756)

Complications of obstructed labour

For the purpose of this study, complications of this nature included ruptured uterus, the later development of fistulas and sterility, as well as sepsis for the mother and serious asphyxia and death for the baby.

Maternal mortality ratio

This was defined as the number of maternal deaths during a given time period per 100,000 live births during the same time period (WHO, UNICEF, UNFPA and the World Bank 2012:6)

Obstetric management

In this study, obstetric management indicated the manner by which the confinement was brought to an end, be it an assisted vaginal delivery or a caesarean section.

Obstructed labour

Obstructed labour designated the phenomenon that despite adequate contractions the delivery of the baby could not be accomplished in a normal, natural fashion but active intervention by health professionals was needed.

Partogram

For the purpose of this study this indicated a graphical representation of the dilatation of the cervix against time with an alert and an action line based on cervical dilatation of 1 cm/hr between 3 and 10 cm (Fraser & Cooper 2009:472, 473).

Prevalence of obstructed labour

The number or percentage of cases of obstructed labour divided by the total number of deliveries, in a facility, area or nation – per year.

1.5 PURPOSE OF THE STUDY

The main purpose of this study was to investigate the prevalence of obstructed labour among pregnant women as well as developing guidelines to deal with obstetrical challenges in Gimbie Zone, West-Wollega, Ethiopia.

1.5.1 Specific objectives

The specific objectives were to:

- Assess the prevalence of obstructed labour in Gimbie Zone, West-Wollega, Ethiopia.

- Identify and describe the complications of obstructed labour in Gimbie Zone, West-Wollega, Ethiopia.
- Develop guidelines to improve care of pregnant mothers for better outcomes of both mother and baby.

1.6 RESEARCH QUESTIONS

The study addressed the following research questions:

- What is the prevalence of obstructed labour in this population of women?
- What is the cause of obstructed labour among pregnant women in Gimbie Zone, West Ethiopia?
- What were the outcomes of obstructed labour for both mother and babies?

1.7 THE RESEARCH DESIGN

This section summarises the research methodology.

1.7.1 The research design

According to Polit and Beck (2006:203), the study design is the researcher's overall plan for answering research questions. This study was a hospital-based quantitative retrospective cross sectional descriptive study.

1.7.2 Research methods

In this section the used methods of research are discussed.

1.7.2.1 *Research setting*

The study site was a selected health facility in West-Wollega region, Ethiopia.

1.7.2.2 Population and sample selection

Sampling was done from maternity cases from 1st January till 31st December 2011. Registers from the labour ward and operating room, as well as patients' charts were evaluated.

1.7.2.3 Data collection

A checklist questionnaire (see annexure 4) was used to obtain data from the registers and patients' files.

1.7.2.4 Data analysis

The collected data was analysed with a Statistical Package for Social Sciences (SPSS) (Version 19.0) as well as Microsoft Excel 2007 to produce graphs and tables. The data were presented as frequency distributions in tables and graphical presentations. Cross tabulations were carried out to identify associations between certain variables. Any associations were investigated on their significance and clinical or human importance.

In particular any risk factors for obstructed labour as well as factors that were related to a poor outcome for mother and/or baby were of particular interest to the researcher.

1.7.3 Validity and reliability

Polit and Beck (2006:340) define validity as the degree to which the instrument measures what it is designed to measure. It ensures that in a research study correct procedures have been applied to find answers to a research question. Validity was ensured by pre-testing of the research instrument.

1.7.3.1 Internal validity

In this study, the researcher conducted a pre-testing of the research instrument to detect any flaws in the tool. In addition, the researcher's supervisor at Unisa also critically evaluated the checklist to check the logical flow of the questions.

Internal validity refers to the extent to which it is possible to make an inference that the independent variable is truly causing or influencing the dependent variable and that the relationship between the two is not the fake effect of a confounding factor (Macnee & McCabe 2008:182; Polit & Beck 2008:303).

1.7.3.2 External validity

This is the extent to which the results of a study can be applied to other groups or situations. It means how accurate the study is in providing knowledge that can be applied outside (Macnee & McCabe 2008:419, 422; Polit & Beck 2008:301-303).

In this study, the researcher ensured that the selected sample was representative of the population and that the findings could be more readily applied to a broader group. The researcher assumed that by looking into the registers of all pregnant women admitted in this health facility from 1st January till 31st December 2011, these cases would be representative of pregnant women with obstructed labour in the general population.

Similarly the study site was carefully selected to be a representative of other clinical settings in which the findings might be applied.

1.7.4 Validity of the research instrument

This was divided into two:

1.7.4.1 Reliability

Pre-testing of the instrument was performed to determine that the variables to be measured in the checklist were not confusing but concise and clear.

Reliability refers to the consistency with which a measure can be counted on to give the same result if the aspect being measured has not changed. A slight ambiguity in the wording of the questions could affect the reliability of a research instrument, resulting in different responses outside (Macnee & McCabe 2008:180-181; Polit & Beck 2008:301-303). In addition, all the data were collected by the researcher and the information was checked for completeness during data collection. The researcher also verified the

degree to which an instrument/checklist was measuring the same attribute or dimension, as a measure of the instrument's reliability.

1.7.4.2 Validity

In this study, the researcher formulated items that had logical links with the research objectives. The items in the checklist covered the full range of issues to be measured. The researcher identified some experts or work colleagues who were knowledgeable on this subject to check and verify the appropriateness of the items in the checklist. The literature from similar studies done elsewhere was reviewed to facilitate the designing of the relevant research tool. The items that were not appropriate were removed and some adjustments were made to improve the instrument.

1.7.5 Ethical considerations

Permission was obtained from the Ethiopia Health Research Ethics Review Committee at the Oromia Regional Health Bureau in Addis Ababa, the Hospital Management as well as from the Research and Ethics Committee of the Department of Health Studies, UNISA (see annexures 1, 2 and 3). The ethical principles of beneficence, respect for human dignity and justice were adhered to. According to Polit and Beck (2006:87), beneficence is a fundamental ethical principle that seeks to prevent harm and exploitation of, and maximise benefits for, study participants. It implies that people, especially professionals, should contribute to the health and welfare of others and that human research should be intended to produce benefits for research subjects themselves, for other individuals or society as a whole. This principle stresses that researchers do no harm to the study participants.

Respect for persons is shown by recognising that an individual has the capability and right to have his/her own opinion and decide independently. If a minor, an incapacitated individual or a member of the uniformed services has lost that independence the protection of respect should be taken over by a third party. Beneficence is the principle (in research and in medical practice) that no harm should come to an individual. If that is not guaranteed the research should not be carried out.

Justice refers to participants' right to fair treatment and their right to privacy. The code of justice aims to guarantee that members of social or ethnic minorities or individuals from otherwise vulnerable population groups will receive the same benefits and no unequal burdens compared to other groups (National Commission for the Protection ... 1978:4, 6, 8). No names were written on the checklist form, only pseudo identifiers/numbers.

1.8 SIGNIFICANCE

Obstructed labour is one of the most common as well as a preventable cause of maternal and perinatal morbidity and mortality in developing countries. Ethiopia being one of such nations is not spared from this challenge. Some studies on obstructed labour have been conducted particularly in other regions in Ethiopia but there is a serious lack of data from the West-Wollega region. Therefore, it was necessary to determine the prevalence of obstructed labour among pregnant women as well as the management and outcome for the mother and child in Gimbie Zone, West-Wollega. The findings of this study might provide some knowledge and insight into the prevalence of obstructed labour in Gimbie zone and this study could form the basis for further research in West-Wollega.

1.9 SCOPE AND LIMITATIONS

The strength of the study was to discover and reveal the magnitude of serious obstetric problems particularly obstructed labour with the various complications and the resulting outcomes for mothers and children. This enabled the researcher to make recommendations for the improved prevention and management of these events.

The major limitations in this study were as follows:

- Due to geographical obstacles many women deliver at home and the selected hospital receives through referral from other health centres the majority of complicated cases. As a result, the findings, the prevalence or incidence of certain complications as they occur in the hospital could not be extrapolated to the general population.

- Since this was a hospital-based retrospective study, there were some important missing data as well as sampling errors due to a non-random selected sample leading to bias.
- This study being retrospective, some of the contributing factors to obstructed labour might not have been recognised since the number of independent variables was limited and others might be masked as a result of confounding factors.

1.10 CONCLUSION

This chapter discussed the global burden of maternal mortality and obstructed labour. It also provided an overview of the problem statement, the purpose and the objectives of the study, research questions as well as the significance of the study. A summary of the research methodology has also been described accordingly. In the next chapter a thorough review of the relevant literature is presented.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter the literature as relevant to the topic of the study is discussed in detail, firstly the burden of disease of obstructed labour worldwide, then for the African continent, as well as in Ethiopia in particular.

According to Polit and Beck (2006:503), literature review is an essential summary of existing research on a topic of interest. It puts a study problem in context and it provides a basis for the implementation of a research project. Literature review also presents a foundation on which to base new knowledge. Burns and Grove (2005:95) state that the key purpose for reviewing relevant literature is to gain a broad background insight or understanding of the available information concerning a specific research problem. This foundation enables a researcher to build upon the findings of others, since major breakthroughs or discoveries of new information in a field are invariably based on previous work.

2.2 THE THEORETICAL BACKGROUND OF OBSTRUCTED LABOUR

Normal labour is defined as the steady progression of the dilatation and effacement of the cervix caused by the uterine contractions and the successful expression of foetus and placenta. Time limits, although open to discussion, are set for the normal duration of the three phases of normal labour (Saju 2011:1).

Dolea and AbouZahr (2003:1, 2) define labour to be obstructed if, despite the presence of adequately strong contractions, the presenting part of the foetus cannot progress through the birth canal (pelvis) of the mother. If labour becomes prolonged or abnormal the diversion from the normal situation is caused by one (or several) of the 3 Ps. Either the passenger (foetus) is too big or malpresented or malpositioned or the passage (pelvis) is too small or too narrow to allow the foetus to pass (Saju 2011:1, 2). The

general term for this inequality is cephalo-pelvis disproportion (CPD). In developing regions, where malnutrition is more common, as well as early marriages whereby the growth of the young mother has not come to full development, the pelvis might be contracted. If the foetus is unusually large, as is possible in diabetes mellitus, the baby cannot be born even if the pelvis is of relatively normal dimensions. Lastly, if the baby presents in an abnormal position, the presenting part might not be able to pass through the birth canal (Dolea & AbouZahr 2003:3). The third P, the power of the contractions, can be insufficient which is called functional dystocia in which situation the dilatation and effacement cannot take place (Fraser & Cooper 2009:568; Saju 2011:1-3). This phenomenon is not included in obstructed labour.

Obstructed labour continues to be a major contributor to the global maternal mortality caused by malnutrition of young girls, – resulting in underdeveloped pelvises – together with the inability of women to timely access adequate maternal/ midwifery care or the lack of such facilities in many regions of the world where resources are limited (Koblinsky et al 2010:7).

The pattern of the outcome of obstructed labour differs per parity: for nullipara, in whom the uterine contractions seize, the risk of fistula is great and real. In parous women the contractions continue, resulting in rupture of the uterus and therefore no time exists to develop fistulas. The complications for all mothers together are then:

- sepsis (due to prolonged labour with ruptured membranes)
- haemorrhage either as a consequence of rupture or an exhausted uterus
- vesico- or recto-vaginal fistulas
- stress incontinence

For the babies the story is universally threatening: asphyxia, brain damage and death may result for more than half of all of them (Neilson et al 2003:191).

Extensive research has revealed that the global maternal mortality and morbidity due to obstructed labour has not significantly changed over the last 30 years (UNFPA 2011:17). In order to prevent obstructed labour the nutritional status of children (girls) needs to be permanently and universally ameliorated.

Till proper universal nutrition will be accomplished the task for health services has to be the early recognition and management of this condition. The right tool for this undertaking is found in the meticulous and constant utilisation of the partograph or partogram which enables the obstetrician to diagnose prolonged or obstructed labour early and easily. Proper intervention, after adequately diagnosing the obstructed labour, will then improve the outcome for both mother and child. To effectuate such a successful outcome the health facilities have to be equipped to enable the universal and accessible provision of Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) (Filippi, Ronsmans, Campbell, Graham, Mills, Borghi, Koblinsky & Osrin 2006:1536; Neilson et al 2003:197).

Another aspect of the prevalence of obstructed labour and its poor outcome for mother and baby is addressed by the human rights and public health discussion. Human rights provide a useful legal and normative framework and can guide the actions of the public health sector. Human rights and public health share the objective of promoting and protecting the well-being of all individuals (WHO, UNICEF, UNFPA and the World Bank 2007b:1). In many cases, women's ill-health is a direct result of violation of the principle of non-discrimination that should guarantee equal access to health care services, the right to education and information, as well as the right to the highest attainable standard of health (WHO, UNICEF, UNFPA and the World Bank 2007b:30).

2.3 THE WORLDWIDE STATUS OF OBSTRUCTED LABOUR

The well being of women and children, as emphasised in MDGs 4 and 5, plays a role in all of the eight Millennium Development Goals. Investing in women's and children's health will help build stable productive families and societies thereby contributing to development at large (Ban 2010:6-9). In poor and developing countries prolonged labour contributes significantly to maternal as well as perinatal morbidity and mortality (WRA for Safe Motherhood 2011:2). Maternal deaths arise from risks that can be attributed to pregnancy and childbirth as well as from the poor quality care by the available health services (Kahn et al 2006:1066). Developing countries are still harbouring 99% of all maternal mortality globally and the adult lifetime risk of maternal death (the probability that a 15 year old female will eventually die from a maternal cause) is highest in Sub-Saharan Africa (SSA) that is, 1 in 31 (WHO, UNICEF, UNFPA and the World Bank 2010:1).

Especially in countries with limited resources, it is difficult, due to unavailability of data from such regions in the world, to assess the exact prevalence or incidence of these conditions (Dolea & AbouZahr 2003:3). These same authors state that from the available literature it seems reasonable to assume that there has been very little change over the last decades in the prevalence of obstructed labour and the figure still stands at 3-6%. In the overview of the global burden of disease from 1990 to 2000 obstructed labour contributed 22% of all maternal conditions (Dolea & AbouZahr 2003:1).

Twenty three countries in SSA have made no or insufficient progress in their attempt for achievement of MDG 5 which aims for a 75% reduction in maternal mortality by 2015 (WHO, UNICEF, UNFPA and the World Bank 2010:2). Six nations together, among which Ethiopia, contribute more than half to the total global maternal mortality of around 350,000 to 500,000 women worldwide in 2007/2008 (UNFPA 2011:19).

According to Kahn et al (2006:1068) obstructed labour contributed 4.1% (range 0–10.3%) to all maternal deaths in Africa; for Asia this amounted to 9.4% (0–12%) and 13.4% (range 0–38.9%) for Latin America and the Caribbean. In contrast most maternal deaths in developed countries are due to other direct causes, mainly complications of anaesthesia and Caesarean sections (Kahn et al 2006:1073).

Variables that might alert to the possibility of obstructed labour include young age, reduced body height, and a history of difficult previous labour. However, none of these are specific and might not negate a normal confinement (Dolea & AbouZahr 2003:6). In other words, it is impossible to predict obstructed labour and the only sensible approach is to observe and monitor very carefully and be prepared for intervention if and when the need arises.

It is easier to obtain information about the fatality and maternal mortality due to obstructed labour. Still caution is needed since death due to obstructed labour could be misclassified under haemorrhage or infection (sepsis), or ruptured uterus. Estimates are that 8% of all maternal deaths could be due to obstructed labour (Dolea & AbouZahr 2003:7).

2.4 THE PREVALENCE OF OBSTRUCTED LABOUR AND ITS OUTCOMES ON THE AFRICAN CONTINENT

In many SSA countries women first of all are socially expected to deliver at home and secondly they are not empowered to make individual decisions about the need for referral and institutionalised care. Financial barriers might also prohibit them from accessing health care. Additionally, the care provided at the health centres might be of insufficient quality (Gabrisch & Campbell 2009:2, 3; Kabakyenga, Ostergren, Turyakira, Mukasa & Odberg-Petterson 2011b:1-2). It is an established fact that in many countries with limited resources many women deliver at home instead of in health facilities. In Malawi 43% of women deliver at home (Kongnyuy, Mlava & Van den Broek 2008:2). When complications arise the women are faced with a weak referral system and additionally the mothers will be assisted by a suboptimal health delivery service system. Pregnant women are vulnerable both economically and socially. Use of maternal health services can easily be deterred by the fear of the anticipated cost (Filippi et al 2006:1536; Gabrisch & Campbell 2009:2).

Kabakyenga et al (2011b:2) in their assessment in Uganda revealed that obstructed labour was identified as the direct cause of maternal death in 22% of cases. The incidence of obstructed labour in this study was 10.5%; and 63.7% of all such cases was related to CPD, the remainder was due to mal-presentation or mal-positioning. The perinatal mortality for the babies of women having deliveries with obstructed labour was 141 per 1,000 total deliveries compared with 65/1,000 for confinements without obstruction. This means a doubling of the risk for the baby (Kabakyenga et al 2011b:5).

The prevalence of maternal complications of obstructed labour noted in this study was: ruptures uterus (7.1%), puerperal sepsis (3.4%) bladder injury (1.8%), postpartum haemorrhage (1.2%) and fistula (1.4%). Factors significantly associated with the incidence of obstructed labour were: young age (15–19 years), nulliparity or only one previous delivery, grand multiparity, and lack of own income. Also residence in another district as where the delivery took place was associated with increased risk. Partographs were correctly filled in only 3.5% of all obstetrical records, indicating poor monitoring and recording during labour in the vast majority of the health facilities (Kabakyenga et al 2011b:6-7).

In a large study in Kano, Nigeria, of more than 12,000 deliveries an incidence of 0.8% of obstructed labour was found. This is much lower than in several other settings in developing countries. The causes were CPD (75%) or malpresentation (9.8%) malposition (13.7%) and foetal abnormalities in 1% (Omole & Ashimi 2007:5960). The management differed according to the viability of the foetus: if alive, Lower Segment Caesarean Section (LSCS) was performed; if the foetus was dead a destructive operation was carried out. The outcome for the mothers was similar after either intervention: only one maternal death was recorded and it was due to eclampsia. No fistulas developed. Puerperal sepsis was successfully treated and the frequency was similar in the two treatment groups. Outcomes for the babies were far less favourable: the perinatal mortality amounted to 52.7% among the cases with obstructed labour. This study mentioned as risk factors for obstructed labour the following variables: young age (since the female pelvis takes up to age 18 to mature), lack of Western style education and grand multiparity (Omole & Ashimi 2007:60, 61, 63).

In Uganda up to the present time still the majority of women choose to deliver at home. A qualitative study by Kabakyenga et al (2011a:8529) looked into the perceptions of women and the community concerning labour in general, obstruction of labour and the management thereof. Through the information gathered from 20 focus group discussions, with as many women as men participating, a grounded theory was constructed. The core category was the desire of a woman to protect the own integrity. This would include the decision to deliver alone at home. Only if problems arose other family or friends (female) were consulted. In case also such intervention did not allow a normal delivery the husband would then be authorised to arrange assistance by a health facility (Kabakyenga et al 2011a:8531-8532).

2.5 ETHIOPIA: COUNTRY PROFILE

Ethiopia is the second most populous country in Africa (after Nigeria), with an estimated population of 80 million, of which more than 85% live in rural areas (MOH 2010:1). Socio-economically, Ethiopia faces many challenges due to regular droughts that negatively affect the agricultural sector. But in the Health Sector Development Plan IV, the government lays out its intentions to develop Ethiopia into a middle income country within several years after 2015. According to figures of 2007/8 32.7% of the population lives under the poverty line. The adult literacy rate stands at 36% for the nation, with

69% for the males and 39% for the female citizens. Among women 51% has never attended any formal education compared to 30% for the men (MOH 2010:3).

The Ethiopian authorities have adopted a national strategy to reduce maternal, neonatal and child mortality and morbidity through a safe nationwide health service delivery that will aim to be accountable and transparent. The goal is to strive for excellence in health service provision (MOH 2010:38).

The Maternal Health Care indicators according to the Ethiopian Demographic and Health Survey 2011 (CSA [Ethiopia] and Measure DHS, ICF Macro:2012:13, 14) have values as shown in table 2.1.

Table 2.1: Maternal health care indicators

Indicator	Urban	Rural	National
Percentage of pregnant women with skilled Antenatal care	76.0	26.4	34
Percentage of pregnant women with professionally assisted delivery	50.8	4.0	10
Percentage of pregnant women with tetanus toxoid vaccination	67.5	44.9	48

(Source: CSA [Ethiopia] and Measure DHS, ICF Macro 2012:13, 14)

The total fertility rate (TFR) in the nation, although declining, still amounts to 4.8 children in a woman’s lifetime. Among currently married women 25% has an unmet need for contraception (CSA [Ethiopia] and Measure DHS, ICF Macro 2012:11).

Relating to maternal health the Maternal Mortality Ratio (MMR), although decreasing is still high at 350 per 100,000 live births (WHO, UNICEF, UNFPA and the World Bank 2012:33). The major challenges in the health sector for women are the shortages of health professionals, particularly midwives, as well as the serious lack of equipment and supplies for the provision of Basic Emergency Obstetric and Neonatal Care (BEmONC). These scarcities are especially felt in the rural areas. Additionally, in those same rural regions the under- financing limits the much needed expansion and development of the health sector. Furthermore, the cultural norms as well as financial deprivation and also

the difficult travelling conditions over great distances impede women to access the health sector easily (MOH 2010:3).

Women have a low status within the society and they are particularly disadvantaged during pregnancy and childbirth, with inadequate health service provision and a high risk of death or disability (Duffy 2007:122; Gabrisch & Campbell 2009:4).

Mulu (2008:6) states that the referral and communication systems are inadequate in Ethiopia, thereby forming a substantial barrier that deters women's access to available obstetric care services and skilled attendance. Jackson (2010:21) expresses that in rural Ethiopia several factors stop women in need of maternal care services from utilising them, namely: distance and lack of transportation, poor social status, poor organisation of health services and a lack of experienced health care providers and inadequate equipment.

West-Wollega, in the western part of Ethiopia, is a mountainous area with remote villages, many unpaved and very few tarred roads, a pressing lack of transportation, high levels of poverty and poor access to health services. West-Wollega is one of the 18 administrative zones of Oromia National Regional State. Administratively, the zone has 21 districts, of which 19 are rural districts and 2 are urban administrations. Health facilities are insufficient in number and many are of substandard quality with low utilisation rates, and high case fatality rates among pregnant women who manage to access health care facilities. Women are particularly disadvantaged in this zone as a result of high illiteracy rates, limited access to contraceptives as well as unsafe water and lacking sanitation. Women mostly deliver their babies at home and many of the occurring maternal deaths are avoidable but have a large impact on child health and development (Duffy 2007:121, 122).

Gimbie Town is situated in the West-Wollega Zone, about 450 km west of Addis Ababa. The total population of West-Wollega is approximately 2.03 million. The selected hospital is providing health care services to the residents of Gimbie Town (approximately 50,000) and the rural communities living in the environs of Gimbie (approximately 200,000). The majority of the population is composed of subsistence farmers, with per capita income below the international poverty line of \$1 USD per day (Duffy 2007:123).

2.6 PREVALENCE OF OBSTRUCTED LABOUR IN ETHIOPIA

The Federal MOH in Ethiopia recognises the challenges existing within the nation concerning maternal (and child) health and outlines in its Health Sector Development Plan IV (MOH 2010:40, 41) that one of the major goals for the health provision will be to strengthen the well-being of mothers and children. Increased attention will be given to the professional attendance during delivery. As mentioned in chapter 1, section 2.2 among women in the rural areas only 4% have skilled personnel attending their confinement (CSA [Ethiopia] and Measure DHS, ICF Macro 2012:13, 14). This has remained virtually unchanged over the past decade (Koblinsky et al 2010:4). Koblinsky et al (2010:7) express that obstructed labour, resulting in ruptured uterus has been a continuing problem noted in hospital maternal mortality studies, contributing 13 to 32% of maternal deaths. Yohannis, Amsalu, Getu, Sisay, Mengesha, Hana, Mulunesh, Birhanu, Yared, Endris and Getachew (2005:13) indicate that the prevalence of obstructed labour is expected to be high in Ethiopia and that it supposedly accounts for 9% of the total maternal deaths.

A retrospective study was conducted in Jimma district hospital, in south western Ethiopia to assess the incidence of obstructed labour and identify the socio-demographic and clinical variables that occur in these mothers. Also the outcome for both the mothers and the children was investigated. During the study period 7% of all the deliveries attended to were cases of obstructed labour. The author noted an increasing trend during the subsequent years of the study. One of the major risk factors was parity: 66.6% of all women with obstructed labour were either primigravid or grand-multiparous. According to the diagnoses of the obstetricians 80.6% of all cases of obstructed labour were due to Cephalo-Pelvic-Disproportion (CPD). The remainder was due to mal-presentation (Asheber 2002:13).

The outcome for the newborns was very poor. Of all babies 62.6% were still born and only 12.5% of the babies had a 5 minute Apgar score above 7/10. Maternal mortality was 9.1% among the cases of obstructed labour. The main reason for death among the mothers was ruptured uterus (66/86) and secondly sepsis (20/86). Maternal mortality was far higher among mothers who were referred from further distanced health facilities with a case fatality rate (CFR) of 7.0% compared to women from within Jimma town for

who the CFR was 1.7%. The author concluded that obstructed labour is by far the most important contributor to maternal and perinatal death with contributing percentages of 45.5 and 37.4% respectively in the population at Jimma district hospital (Asheber 2002:14, 15).

A comparable study was carried out in the extreme north of the country, in Adigrat, Tigray region, with a retrospective design. The researchers reviewed patients' records, maternity registers and Operating Room books. Among 5,980 deliveries 195 cases of obstructed labour were diagnosed or 3.3%. The vast majority of cases came from rural areas: 88%, and the mean duration of labour was 45.4 hours, range 2–144 hours. The causes for the obstruction of labour were CPD in 64.9% and malpresentation or malposition in 32.5%. The maternal and perinatal death rates were 3.7% and 55.5% respectively, hereby confirming that obstructed labour is a major contributor to mortality of mother and especially the neonate. Duration of labour was the most important identified risk factor related to maternal and perinatal morbidity and mortality. Therefore the most sensible recommendation would be the universal provision of antenatal care and skilled attendance during delivery with a meticulous use of the partograph (Gessesew & Mesfin 2003:176-180).

Another cross-sectional prospective study in Jimma specialised hospital for a period of 6 months till April 30, 2009, showed an incidence of 12.2% obstructed labour among 1,468 deliveries. The causes for the obstruction of labour were CPD in 67.6% of the cases, malpresentation in 27.9% and 4.5% due to foetal anomalies or pelvic mass. The two most common maternal complications were uterine rupture in 45.1% of cases and sepsis in 39.3%. Maternal mortality was not assessed. Outcome for the foetuses showed that 54.2% was stillborn, with a perinatal mortality rate of 66.1 per 1,000 births (Shimelis et al 2010:146-149). As risk factors for a negative outcome for both mother and child were identified 1) the absence of antenatal follow-up and 2) the presence of prolonged labour.

2.7 THE REASONS FOR THE POOR OUTCOME OF OBSTRUCTED LABOUR

Dolea and AbouZahr (2003:8) developed the following model of obstructed labour and its outcomes as shown in figure 2.1.

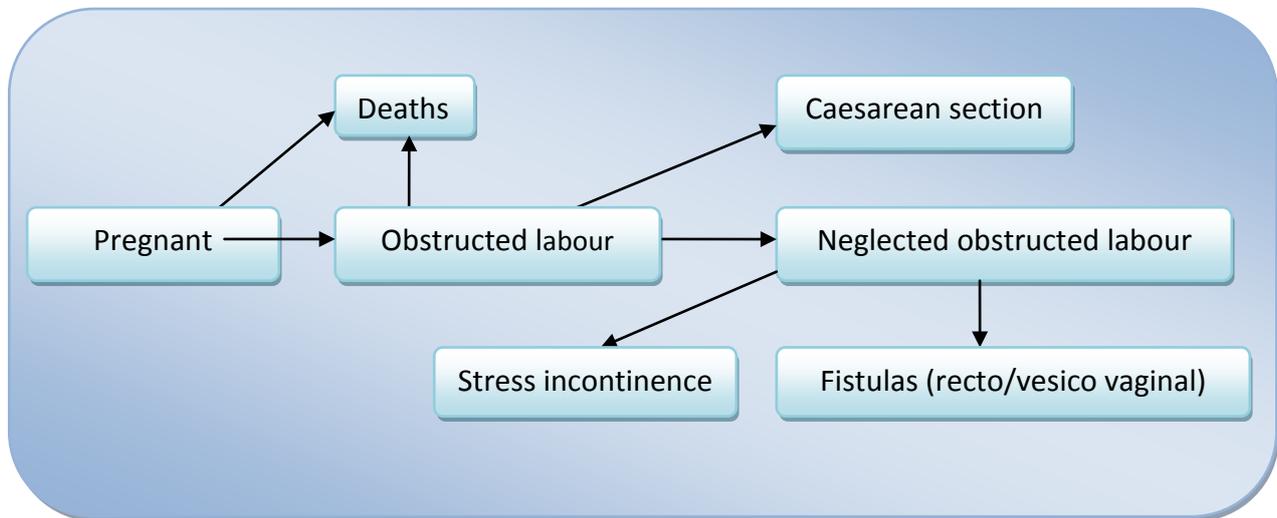


Figure 2.1: Model of obstructed labour and its outcomes

(Source: Dolea & AbouZahr 2003:8)

Pregnancy might lead to death even before delivery time. Once labour is obstructed it might lead to death, or result in a Caesarean section – either delayed or in good time. The long term consequences of neglected obstructed labour are stress incontinence and fistulas. Fistulas develop when the presenting part of the foetus exerts prolonged pressure on the bladder or rectum wall and interrupts the circulation, resulting in tissue necrosis. A permanent connection between vagina and bladder or rectum and vagina thus occurs. The consequences of a fistula go far beyond the uncomfortable physical symptoms of horrible smell and leaking faeces or urine but include social isolation, divorce and rejection by family and society (Dolea & AbouZahr 2003:11). In developed and industrialised nations no fistulas are seen nowadays as a result of obstructed labour but mainly as a complication from cancer surgery or radiation therapy. In resource-poor countries these fistulas continue to plague women unabatedly (Dolea & AbouZahr 2003:6; Semere & Nour 2008:193). Maternal health is more than survival. Long term complications both physically, psycho-social and economic, as well as

marital disharmony – are 20 to 30 times more common than maternal deaths (Rosenfield et al 2007:1396; Paxton & Wardlaw 2011:1990).

According to Gabrisch and Campbell (2009:2-4), Thaddeus and Maine developed a conceptual framework called the Three Delays Model. This model, as stated in chapter 1, section 2.2, recognises obstacles to the provision and utilisation of high quality, timely provided obstetric care. It identifies individual decision making, access to affordable services, and the provision of skilled personnel as the main factors which can delay access to effective interventions to prevent maternal mortality (Gabrisch & Campbell 2009:2-4). The aspects of this model will be discussed below.

Three Delays Model

Phase 1: Delay in the decision to seek care

- Failure to recognise complications
- Acceptance of maternal death
- Low status of women
- Socio-cultural barriers to seeking care: women's mobility, ability to command resources, decision-making abilities, beliefs and practices surrounding childbirth and delivery, nutrition and education

In this phase, the initial delay takes place when the mother in labour and her care takers do not recognise the need and urgency for professional assistance when the delivery process is not developing in a favourable manner. This error of judgement can be caused by a series of socio-cultural, economic factors as well as the perceived benefits of health care seeking behaviour (Say & Raine 2007:814-815; WHO 2006a:10).

According to Duffy (2007:123), a delay in seeking and reaching appropriate care relates directly to the issue of access. It encompasses factors within the family and in the community, including a woman's status, health care costs and distance from health facilities and transportation. In Gimbie, communities have little knowledge of life-threatening pregnancy complications and, even when a complication is recognised, the costs of medical treatment may discourage attendance at health facilities (Duffy 2007:123).

Phase 2: Delay in reaching care

- Poor roads, mountains, islands, rivers – poor organisation of infrastructure

The second postponement happens when the decision to present the mother to a health care facility has been made but the transport takes time, and too many precious instants are lost (Gabrish & Campbell 2009:3). In Gimbie most of the population lives in villages located many kilometres from the selected hospital, with no proper road transport and muddy, mountainous terrain has to be crossed. Oftentimes, women are carried to hospital on improvised stretchers, a journey that can take many hours. It is not uncommon for women to remain at home, in labour, for 3 or 4 days before seeking medical care, with a resulting high rate of foetal death and ruptured uterus (Duffy 2007:123).

Phase 3: Delay in receiving care

- Inadequate facilities, supplies, personnel
- Poor training and demotivation of personnel
- Lack of finances

Finally, the third hold-up is caused at the health facility where the right and urgently needed decision for active intervention is not made soon enough, or the expertise and equipment for the successful intervention are not available (Gabrish & Campbell 2009:2). The delay in receiving high-quality care at health facilities relates to the number and skills of health professionals and the availability of equipment and drugs for emergency obstetric care. These are particularly challenges in resource-poor countries. Ethiopia has a shortage of health professionals at all levels, including doctors, nurses and midwives, and poor clinical governance processes to monitor standards of health care (Duffy 2007:124). The interplay of these three delays can result in a disastrous outcome for mother and child (Gabrish & Campbell 2009:4; Human Rights Centre, University of Essex [s.a.]:8).

One of the most important ingredients for a successful obstetric result for mother and baby depends on the health care system's capacity to provide the necessary care

locally as well as the possibility of timely referral in case such a need arises. To have the benefit of such services the women have to attend antenatal clinics (ANCs): unfortunately the poor and uneducated women, especially in rural areas have little chance to utilise such facilities. In Ethiopia only 28% of pregnant mothers attend ANC once. A fully covered pregnancy with at least 4 antenatal visits occurs only in 12% of the nation's pregnancies (WHO and UNICEF 2010:86).

Among mothers in rural Ethiopia only 4% have professional obstetric care during their delivery (CSA [Ethiopia] and Measure DHS, ICF Macro 2012:14). There is a serious mismatch in distribution of midwives according to the regions where they are most needed due to problems of lack in motivation, insufficient compensation and the severe challenge to retain the health professionals in their positions in the (rural) communities. This is called the triple gap (UNFPA 2011:V-VII) of the availability of (1) *competence* – not enough fully qualified midwives,(2) *coverage* - some regions have severely inadequate levels of staffing and (3) *access* – the distances for many women to reach the health facilities are simply prohibitive. This triple gap is especially desperate in the rural areas (Rosenfield et al 2007:1397).

Too many women die in the prime of their life – in pregnancy or during delivery. Universally it is known what works and what needs to be done. Governments need to be held accountable; what is done now, in the present, will decide what the future will look like (Filippi et al 2006:1540).

2.8 INTERVENTIONS TO AMELIORATE MATERNAL AND CHILD OUTCOMES

Most maternal deaths and morbidity are preventable. The knowledge and ability is available to stop these fatalities. Universal access to family planning, sufficient adequate antenatal clinic attendance, emergency obstetric care and skilled assistance at delivery provide the answers and solutions for this greatest health divide between developed and developing nations (UNFPA 2011:17,20).

Worldwide, up to 15% of pregnancies might develop a risk of complications and these usually come unpredicted and unexpected. Whether the outcome will be threatening to the life of the mother and/ or baby mainly depends on the availability of proper obstetric

health care provision (WHO, UNFPA, UNICEF and the World Bank 2007a:v; Rosenfield et al 2007:1396).

Since 1987 the internationally launched Safe Motherhood Initiative was aiming to improve the outcome of pregnancies and deliveries but this was initially not very successful because the main goal was primarily focused on better outcomes for the newborns and not for the mother (Rosenfield et al 2007:1395). Secondly, the training and utilisation of traditional birth attendants have proven to be less effective than was hoped and anticipated (WHO 2006a:11).

So the emphasis is now correctly placed on the adequate provision of health professionals that can deliver the necessary antenatal and obstetric and midwifery care. Skilled midwives are essential for the provision of such services and will be instrumental in the attainment of MDG 5 (UNFPA 2007:6, 12). For Ethiopia, where in rural areas only 4% of mothers have access to professional midwifery care during delivery (see above), this means that the country should increase the number of midwives more than four-fold (UNFPA 2011:ix). But, for professional health workers to be effective, they need access to adequate equipment and supplies in addition to the existence of a well functioning referral system (Rosenfield et al 2007:1397).

Furthermore, financial incentive programs have been applied in several nations to assist the women (and their families) to cope with the monetary consequences of obstetric professional help. Realising that resources are essential for women to enjoy reproductive health care these programs attempt to take away any barriers that might lead to delays and inability to access this necessary care (Jones, Samuels, Gisby & Presler-Marshal 2011:1,9).

Much work needs to be done to sensitise women, their husbands and families, even communities at large to change the perceptions of (obstructed) labour and the necessity to deal with the issue within the shortest possible timeframe. Health care providers need to be aware of the negative views of women and their families regarding the assistance that is provided to deliver women and do all they possibly can to improve that image to reduce the inopportune barrier for women to seek assistance for their confinement (Kabakyenga et al 2011a:8537).

2.9 SUMMARY

This chapter discussed the literature relevant to the global burden of obstructed labours, its complications and outcomes including the three delays model as a conceptual framework. The literature review identified previous studies that have been done regarding this topic.

Chapter 3 will discuss the research methodology to be used in this study. This will take account of the research design, setting, sampling, data collection methods, data analysis processes and ethical considerations.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In chapter 1, an overview of the study was described. The literature review in chapter 2 concentrated on the theoretical background of obstructed labour, its global burden and prevalence, the conceptual framework and reasons for the poor outcome, research methodologies used and the achieved results by other researchers as well as some interventions that have been implemented to ameliorate maternal mortality related to obstructed labour.

Therefore, in this chapter, the research methodological processes that were used in the current study are discussed. This includes the research design, study site, target population, sampling methods, data collection techniques, validity and reliability of the research instrument, pre-testing of the research instrument, ethical considerations and data analysis procedures.

3.2 RESEARCH DESIGN

According to Polit and Beck (2006:203), the study design is the researcher's general plan for responding to the research questions. Such a design includes an outline of what the investigator will do from the writing of the hypotheses, or research questions, and their operational implications to the final analysis of data. This research was designed as a hospital-based quantitative, retrospective, cross sectional, non intervention study of descriptive nature.

3.2.1 Retrospective quantitative descriptive study designs

Retrospective study designs are studies in which a phenomenon existing in the present is related to an event that occurred in the past before the study was initiated. Retrospective studies are often cross-sectional with data collected both for the

dependent and independent variables. The researcher is interested in the present outcome and attempts to determine antecedent factors that caused it (Macnee & McCabe 2008:272-274, 509; Polit & Beck 2008:765).

Hess (2004:1171, 1172) mentions that a retrospective study uses existing data that have been recorded for reasons other than research. In health care these are often called "chart reviews" because the data source is the medical record. In a retrospective study, the intervention, baseline situation, and outcome are obtained from existing information that was recorded for reasons other than the study. Whereas a retrospective study relies on existing data, one limitation is or can be that some important information might be missing or is otherwise unavailable (Rothman 2002:71).

A particularly useful application of a retrospective study is that it can help to focus the study question, clarify the hypothesis, determine an appropriate sample size, and identify feasibility issues for a prospective study. The researcher was interested to find the prevalence of obstructed labour and had opted for this study design in order to determine the current phenomenon (Hess 2004:1172).

Polit and Beck (2008:249) point out that quantitative research is a formal, objective, systematic process in which numerical data are utilised to obtain information. The research technique is used to describe variables, examine relationships among variables, and determine cause-effect interactions between variables. According to Burns and Grove (2005:23), quantitative research is considered to produce a "hard or true" science that is based on rigour, objectivity, and control. In addition, in quantitative descriptive research, investigators often employ different methods such as interviews, unstructured observations, structured observations which are guided by a checklist and questionnaires to identify and illustrate the trend being studied. Therefore, quantitative research utilises structured tools to generate numerical data and uses statistical methods to interpret, organise and present such collected data (Burns & Grove 2005:232).

This study also described the existing phenomenon of obstructed labour. According to Polit and Beck (2008:274), a descriptive study design provides a way of discovering new meaning, describing what exists, determining the frequency with which a phenomenon occurs, and categorising information. It offers an accurate representation

or account of characteristics of a particular individual, situation, or group (Burns & Grove 2005:26; Polit & Beck 2008:274).

3.3 RESEARCH SETTING

The study site was one of the selected health facilities in the West-Wollega region in Ethiopia. The site was selected by using a non-probability, purposive sampling technique. A research setting is the environment in which the study takes place. The setting can be natural or controlled (Burns & Grove 2005:346; Polit & Beck 2006:264; Polit & Beck 2008:339). This study took place in a natural setting or real-life environment and no manipulation or change of the environment had been made in the selected health facility which might have affected the results/findings of the study.

3.4 POPULATION AND SAMPLE SELECTION

According to Burns and Grove (2005:345) and Polit and Beck (2008:339, 352) sampling involves selecting a group of people, events, behaviours, or other elements with which to conduct a study. It is the process of selecting a number of study units or portion of the population from a defined study population to represent the total population and the findings from the sample may represent the characteristics of the rest of the group.

In this study sampling was done from maternity cases admitted at the selected hospital from 1st January till 31st December 2011. The sample population consisted of all pregnant women presenting themselves in labour in this health facility with obstructed labour. Polit and Beck (2006:511; 2008:352), mention that the target population is the whole/entire population in which the researcher is interested and to which she or he would like to generalise the study results (Burns & Grove 2005:341-342; Polit & Beck 2006:511; 2008:352). A sample of those with a history of complicated or obstructed labour were reviewed from registers from the labour ward and operating room, as well as patients' charts, as this was a retrospective study.

3.5 DATA COLLECTION

According to Burns and Grove (2005:4) and Polit and Beck (2006:498; 2008:414-417), data collection is the gathering of information to address a research problem. It is the

precise, systematic gathering of information relevant to the study purpose or the specific objectives or questions of the research.

3.5.1 Data collection tool/instrument

A checklist was used to obtain information/data from the maternity, operating theatre registers and patients' files. Polit and Beck (2008:417) defines a checklist as a two-dimensional arrangement in which a series of questions is listed along one dimensional (usually vertical) and response alternatives are listed along the other. Checklists (sometimes called matrix questions) are relatively efficient and easy to understand and apply.

3.5.2 Ensuring collection of quality data

The researcher collected the data himself. The completed checklists were double checked by the researcher and a colleague to ensure that all the information has been properly collected and recorded. In order to ensure internal consistency, before and during data processing, the information was re-checked for completeness. Furthermore, the researcher had designed the data collection tool free from any bias.

3.5.3 Pre-testing the instruments

Polit and Beck (2006:296) state that a pre-test is a small scale study to establish whether the instrument is useful in generating the required information. In other words, it is a trial run to determine as to whether the instrument is obviously correctly worded and free from major biases and whether it solicits the required type of information.

In this study, the data collection tool was pre-tested on five maternity cases (from the maternity register) with obstructed labour to check for clarity of the items and also to identify any confusing or any vague items in the checklist. Some modifications were applied based on the outcome of the pre-test results. Certain variables like the highest education reached could not be obtained from the patients' files. Also the exact distance from the hospital was not possible to verify. These variables were excluded from the questionnaire. The only value collected for such variables would have been 'missing data'. However, no participants had to be excluded from the study due to this

modification. This adjustment was implemented to ensure validity and reliability of the research instrument. The five pre-tested patients' files were not included in the current study.

3.6 VALIDITY AND RELIABILITY

Validity and reliability are the two most significant standards for evaluating quantitative instruments. Thus, precision is expressed as validity and reliability.

Internal validity

Internal validity refers to the extent to which it is possible to make an inference that the independent variable is truly causing or influencing the dependent variable and that the relationship between the two is not the fake effect of a confounding factor (Macnee & McCabe 2008:182; Polit & Beck 2008:303). The three types of validity that had to be considered in this study were face, content and construct validity.

Face validity

According to Shuttleworth (2009a), face validity is a measure of how representative a research study is 'at face value,' and whether it appears to be a good project. It refers to the subjective judgment on whether the data collection tool shows that it is measuring what it is supposed to measure (Polit & Beck 2006:264-265; Polit & Beck 2008:302). In this study, the researcher constructed research items in the checklist that had logical links and were relevant to the study objectives and questions. This checklist underwent revision by other experts/researchers in the subject matter, work colleagues and the researcher's supervisor at Unisa to verify the appropriateness and consistency. Modifications were made accordingly from the reviewers' feedback. Additionally, the literature review from similar studies done in Ethiopia and elsewhere was conducted to enhance the designing of the research tool.

Construct validity

Construct validity defines how well a test or experiment measures up to its claims. It refers to whether the operational definition of a variable actually reflects the true

theoretical meaning of a concept (Shuttleworth 2009b). It is an inference of how well a certain tool measures a theoretical construct. It warrants that the abstract concepts are measured logically and the association between variables are identified with the tool based on theory and clear operational definitions (Burns & Grove 2005:217; Polit & Beck 2006:330).

In this current study, the variables were operationalised to create common understanding between the researcher and readers. The researcher constructed the checklist based on the reviewed literature and the relevant variables to be measured to determine the degree to which it will collect the required information. Pre-testing the research tool also gave extra strength to the tool.

Content validity

Content validity, sometimes called logical or rational validity, is the estimate of how much a measure represents every single element of a construct (Shuttleworth 2009b). Burns and Grove (2005:376) and Polit and Beck (2006:328) indicate that it is a systematic assessment of the content of a tool to make certain that it effectively represents the entire content area, or domain specified. It is assessed on the basis of the extent to which items or questions represent the issue they are supposed to measure. In this study, the researcher verified content validity by asking certain experts in the research domain to evaluate the checklist, those who are knowledgeable of research tool development and also with extensive experience on obstructed labour to review if the tool covered the research objectives, questions as well as readability of the items. In addition, the experts also validated the appropriateness, accuracy and representativeness of the instrument. The items that were not relevant or appropriate were removed or modified to improve the instrument. Furthermore, literature review also facilitated and added more value to the design and validity of the tool.

In this study, the researcher carried out a pre-testing of the research instrument to detect any flaws in the tool. In addition, the researcher's Supervisor at the University of South Africa critically evaluated the checklist to check the logical flow of the questions.

External validity

This is the extent to which the results of a study can be applied to other groups or situations. It means how accurate the study is in providing knowledge that can be applied outside the present sample and population (Macnee & McCabe 2008:419; 422; Polit & Beck 2008:301-303).

In this study, the researcher had to ensure that the selected sample is representative of the population and that the findings can be more readily applied to a broader group. The researcher assumed that by looking into the registers of all pregnant women admitted in this health facility from 1st January till 31st December 2011, these cases were representative of pregnant women with obstructed labour in the general population of the area. Similarly the study site had been carefully selected to be representative of other clinical settings in which the findings might be applied.

Reliability

Reliability refers to the consistency with which a measure can be relied on to give the same result if the aspect being measured has not changed. A slight ambiguity in the wording of the questions can affect the reliability of a research instrument, resulting in different responses outside (Macnee & McCabe 2008:180-181; Polit & Beck 2008:301-303). In addition, all the data have been collected by one person, the researcher, and the information was consistently checked for completeness during data collection. The researcher also ascertained the degree to which the instrument/checklist is measuring the same attribute or dimension, as a measure of the instrument's reliability.

Pre-testing of the instrument was performed to determine that the variables to be measured in the checklist were not confusing but concise and clear.

3.7 DATA ANALYSIS

Analysis was at the univariate and the bivariate levels using the SPSS (Version 19.0) as well as Microsoft Excel 2007 to produce graphs and tables. Descriptive and inferential statistics such as frequency tables, percentages and correlation tests were utilised during data analysis and summaries. The researcher utilised simple tests of

relationships or associations to identify the relationships between different variables including frequencies. The Chi-Square test was used to compare means and the t-test to compare the relationship between variables. The researcher has presented the data as frequency distributions in tables and graphical presentations. As mentioned in chapter 1, section 7.2 in particular any risk factors for obstructed labour as well as factors that were related to a poor outcome for mother and/or baby were of particular interest to the researcher.

3.8 ETHICAL CONSIDERATIONS

To ensure the ethical conduct of the study, the researcher has observed the following principles:

3.8.1 Permission to conduct the study

As indicated in chapter 1, section 1.7.5, permission was obtained from the Ethiopia Health Research Ethics Review Committee at the Oromia Regional Health Bureau in Addis Ababa, the Hospital Management as well as from the Research and Ethics Committee of the Department of Health Studies, University of South Africa.

3.8.2 Confidentiality

The researcher followed strict data management procedures. No names of the patients were written on the checklist form, only pseudo identifiers/numbers. The checklists were assigned numerical identifiers and data were reported in aggregate form. Additionally, the researcher did not mention participating site by its real name in the report, but identified it as “the selected health facility”. Furthermore, the completed data collection tools were stored in a locked cabinet and only the researcher had access to this cabinet. No other hospital employees were or would be able to link clinical or scientific data to any former patient. After finalising the collection of data all the patients’ charts, the maternity register and operating room register were replaced without any marking that could indicate which cases were studied.

3.9 SUMMARY

This chapter discussed the research methodology which will be applied during this study. Chapter 4 will present the study findings and the discussion of the findings. In chapter 5 conclusions, limitations and recommendations will be set forth.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

In chapter 3 the research methodological processes that were used in the current study were discussed. This included the research design, study site, target population, sampling methods, data collection techniques, validity and reliability of the research instrument, pre-testing of the research instrument, ethical considerations and data analysis procedures. In addition the ethical concepts of research were explained. In the current chapter the findings from the data are presented and discussed along with statistical analysis.

4.2 STATEMENT OF THE PROBLEM

Despite the fact that obstructed labour in Ethiopia is supposedly a common cause of maternal and perinatal morbidity and mortality, and although some studies have been carried out in some regions of Ethiopia, no research has been conducted in West-Wollega. Therefore, it was essential to undertake this study in order to have an overview of the burden of obstructed labour in this region.

4.2.1 Purpose of the study

The main purpose of this study was to investigate the prevalence of obstructed labour among pregnant women as well as developing guidelines to deal with obstetrical challenges in Gimbie Zone, West-Wollega, Ethiopia.

4.2.2 Research objectives

The specific objectives were to:

- Assess the prevalence of obstructed labour in Gimbie Zone, West-Wollega, Ethiopia.

- Identify and describe the complications of obstructed labour in Gimbie Zone, West-Wollega, Ethiopia.
- Develop guidelines to improve the care of pregnant women for better outcomes for both mother and baby.

4.3 DATA ANALYSIS

The study was conducted between December 2012 and February 2013. The data were collected at the selected hospital by the researcher using the checklist tool to extract the needed data from the patients' files, the maternity register as well as the register for the operating room.

The data were entered into the SPSS (Version 19.0), and statistically analysed with this software package. Both descriptive and cross tabulation analysis were performed. Graphs were produced in Microsoft Excel 2007. Descriptive analysis was applied to summarise and organise the data. The study's findings are presented according to the objectives and research questions of the study. Summary data are presented in frequency distribution tables. In order to understand and conceptualise the results, the data are shown in figures, expressed as percentages and proportions using bar, column, pie and other charts.

4.3.1 Inclusion of study cases

During the period from January 1 till December 31, 2011, 143 women were diagnosed with obstructed labour. Among these mothers there were three cases with twins, so 146 babies were born. All these were included in the study.

4.4 DEMOGRAPHIC CHARACTERISTICS

The demographic information includes age, marital status, education status, residence and distance from the health facility.

4.4.1 Age distribution

Of the 143 women who were diagnosed as having obstructed labour the mean age was 24.5 years with a standard deviation (SD) of 4.7. The findings clearly show that the age groups of 2–24 years and the cohort of 25 to 29 years are predominant with respectively 59 (41.3%) and 44 (30.8%) of the cases. Among all the women 14 (9.8%) cases were 15–19 years old. The age group from 30 to 34 years included 19 (13.3%) and 7 (4.9%) women were aged from 35 and above.

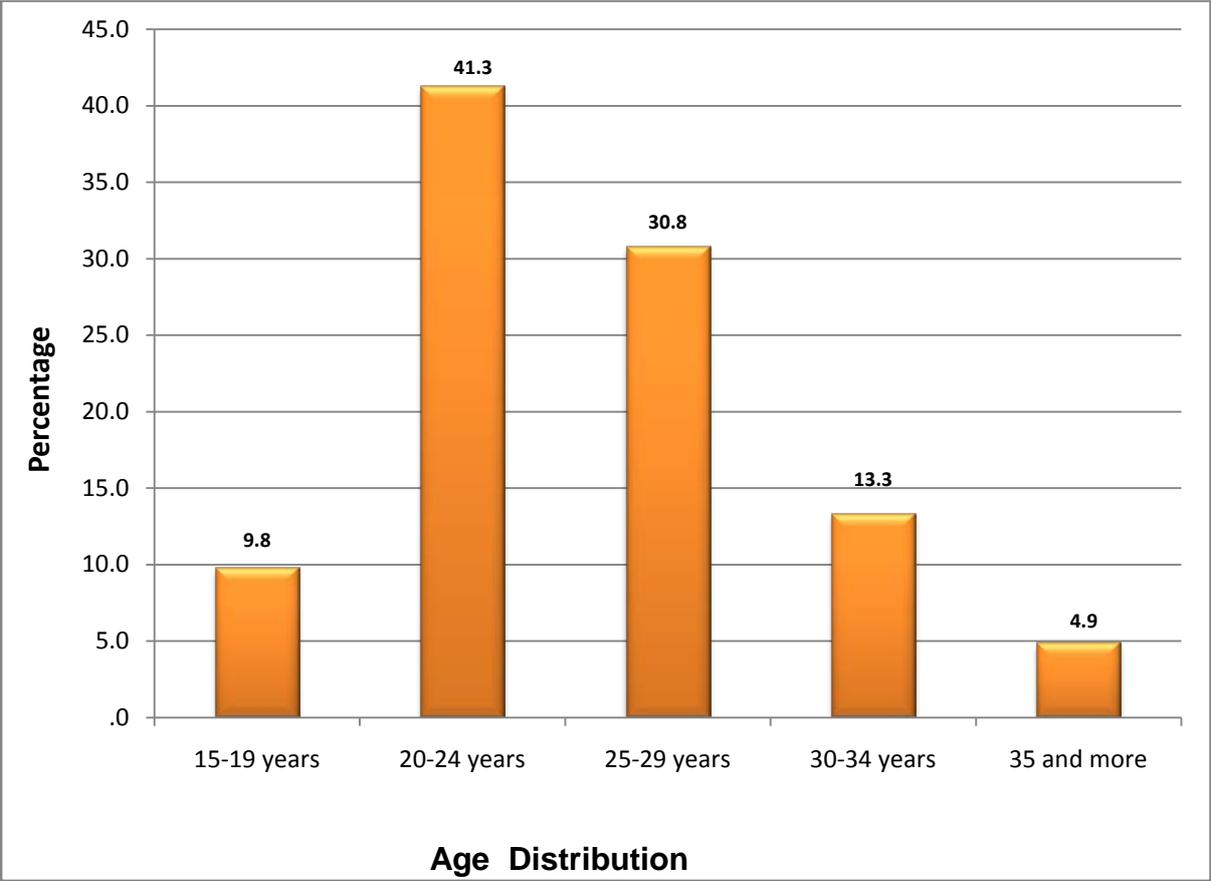


Figure 4.1: Age distribution among women with obstructed labour (n=143)

4.4.2 Marital status

Married status was indicated in only 1 (0.7%) out of 143 cases included in the study. The antenatal chart issued by the federal Ministry of Health (MOH) in Ethiopia includes a section relating to several demographic indicators, including age, education and marital status. In all the other files and antenatal cards this information was not

recorded. Important data were missing in relation to the characteristics of this group of women that is exposed to serious danger in pregnancy and during delivery.

The knowledge of marital status is crucial because studies have shown that it is an important determinant of health care utilisation. Girma, Jari and Girma (2011:92, 95, 98) conducted a study among Ethiopians in the South west of the nation concerning their health care utilisation. Their findings indicated that the attendance increased more than two-folds with married status. In addition, the study observed that the marital status provided both a predisposing as well as an enabling factor towards health care utilisation (Girma et al 2011:92). Similar findings are also reported in a study concerning factors influencing safe delivery service utilisation by Nigussie, Haile Mariam and Mitike (2004:145, 150). Their study noted that marital status made health care utilisation eight times more likely. Such vital information with pertinent relevance relating to the pregnant women could have contributed to the understanding of health seeking behaviour in this study.

4.4.3 Educational status

Similarly, data relating to the educational status of the mother were missing in all the 143 cases included in this study. The Ethiopian Ministry of Health documents provide a space for educational status on both the antenatal cards and the maternity admission files; however, these data are not routinely recorded in the selected hospital. Education is one of the most critical variables in epidemiological reviews of health service utilisation. There is a positive relationship between levels of maternal education and health service use. The lack of formal schooling and illiteracy has been usually associated with high risk and low health seeking behaviour. The general level of education in a country becomes a marker significantly influencing the health seeking behaviour of individuals and communities, including the utilisation of modern health care service (MOH 2010:3). Fantahun and Degu (2003:146) reported a strong correlation between health care service use and education with an Odds Ratio (OR) of 3.4.

Gurmesa and Abebe (2008:217) conducted a study regarding the factors that influence safe delivery service utilisation in north-west Ethiopia. Health service usage positively correlated with both mothers' and husbands' education especially if they had obtained secondary school level and beyond. Furthermore, it was reported that additional

schooling showed a strong positive association with safe delivery services usage. According to Yohannis (2013:14), health care seeking behaviour and in particular also antenatal care use is strongly correlated with higher education among the women. In addition, the 2011 Ethiopian Demographic and Health Survey (CSA [Ethiopia] and Measure DHS, ICF Macro 2012:14, 15) state that antenatal care is most common among women with higher education and the mother's educational status is highly correlated with whether delivery is assisted by a health professional and also whether the delivery takes place in a health facility.

Therefore the absence of these data causes a negative impact on the evaluation of health seeking behaviour, utilisation of health services and educational status of pregnant women at this selected hospital.

4.4.4 Residence

Regarding residence, the cases came from various villages in the surrounding region as shown in figure 4.2. Two-fifth, 59 (41.5%) lived in the Gimbie area, 20 (14.1%) in L/Assabi, 14 (9.9%) in Haru, 16 (11.3%) in Gandji. 12 (8.5%) resided in Homa area, S/Nole 5 (3.5%), Nole Kaba 6 (4.2%), Yaso 3 (2.1%). Five other residences were found for 5 individual cases (3.5%) and for 2 (1.4%) the data were missing.

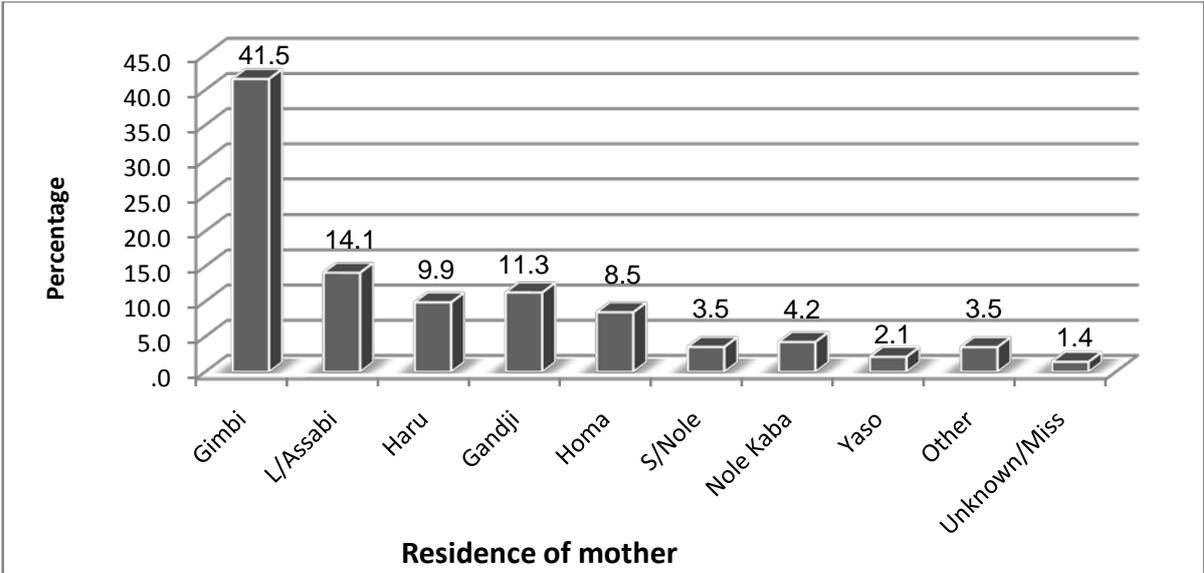


Figure 4.2: Residence of mother (n=143)

4.4.5 Distance from home to the health facility

The current study assessed the distance from home to the facility. Figure 4.3 shows that 59 (41.3%) lived within a radius of 9 km from the selected hospital. Another 30 (21.0%), lived between 10 and 29 km away from the hospital, 17 (11.9%) came from a distance between 30 and 59 km and 12 (8.4%) came from a distance of 60 km or beyond and for 25 (17.5%) of the cases the data were missing or unknown.

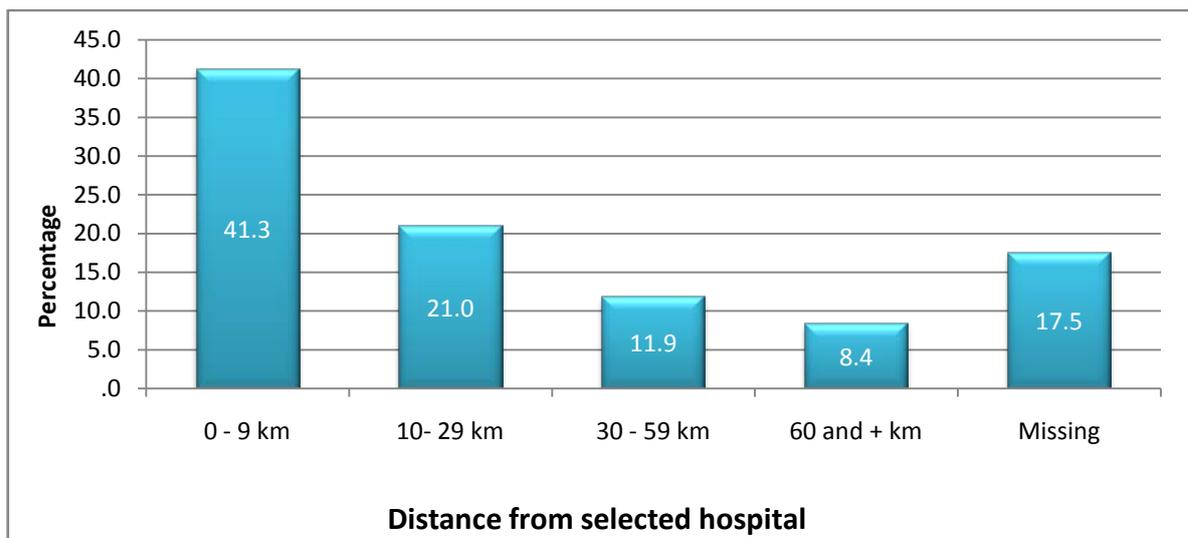


Figure 4.3: Distance from the selected hospital (n=143)

4.5 MOTHERS' OBSTETRIC HISTORY AND OTHER VARIABLES

The section B of the research tool (checklist) included the parity of the mother, the gestational age of the pregnancy at the time of delivery, the number of antenatal clinic (ANC) visits, the mode of delivery, the indication for the delivery procedure, and the mode of delivery in the previous pregnancy. Also the complications for the mothers as well as for the babies were studied, as well as the birth weight of the babies, and their APGAR scores.

4.5.1 Parity of the mother

As shown in figure 4.4, just over half (n=78; 54.5%) were nulliparous (first pregnancy), 24 (16.8%) were para 1, 17 (11.9%) were para 2, 9 (6.3%) were para 4 and finally it was observed that the same number of cases (n=5; 3.5%) were para 3, or more than 5, or

either the data were missing on the antenatal card and on the maternity admission file. These findings are in contrast with a study by Gessesew and Mesfin (2003:177) where only 28.8% were primigravid, 47.1% were parity 1 to 4 combined and 24.1% were parity 5 or above. Shimelis, Hailemariam and Fessahaye (2010:147) study in Jimma, Ethiopia, found that among the women with obstructed labour 34.1% was primigravid, 41.9% was parity 1 to 4 and 24.0% was parity five or above. So clearly in this current study there was a relatively dominant representation of primigravid women. The total of para 1–4 amounts to 55 (38.5%) women in the current study.

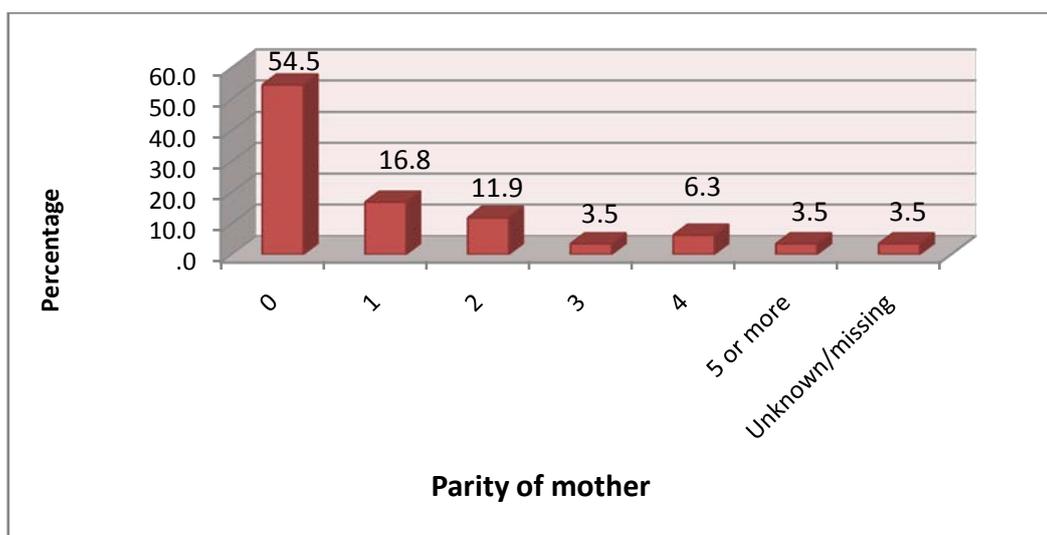


Figure 4.4: Parity of women with the diagnosis of obstructed labour (n=143)

4.5.2 Parity of mother according to age

Regarding parity according to age, figure 4.5 shows that 10 (71.5%) cases in the age cohort 15–19 years were para 0 (first pregnancy) and 3 (21.5%) were para 1; in 1 (7.1%) case data was missing. For the cohort 20–24 years, it was noted that 43 (72.9%) were para 0, but 10 (16.9%) had their second pregnancy, 5 (8.5%) had the third pregnancy and in 1 (1.7%) case the data was missing. In the cohort 25–29 years 21 (47.7%) cases were para 0, 8 (18.2%) cases were para 1, para 2 were 7 (15.9%), para 3 were 2 (4.5%), para 4 were 4 (9.1%) and only 1 (2.3%) was para 5 or above and for 1 (2.3%) the data was missing. For the cohort of 30–34 years 3 (15.8%) cases were para 0, para 1 were 2 (10.5%), para 2 were 4 (21.0%), para 3 were 2 (10.5%), 4 (21.0%) were Para 4 and 3 cases (15.8%) was para 5 or more and for 1 (5.3%) data was

missing. In the 35 years and above cohort there is 1 (14.3%) case in each parity group, and for one case the parity information was missing or unknown.

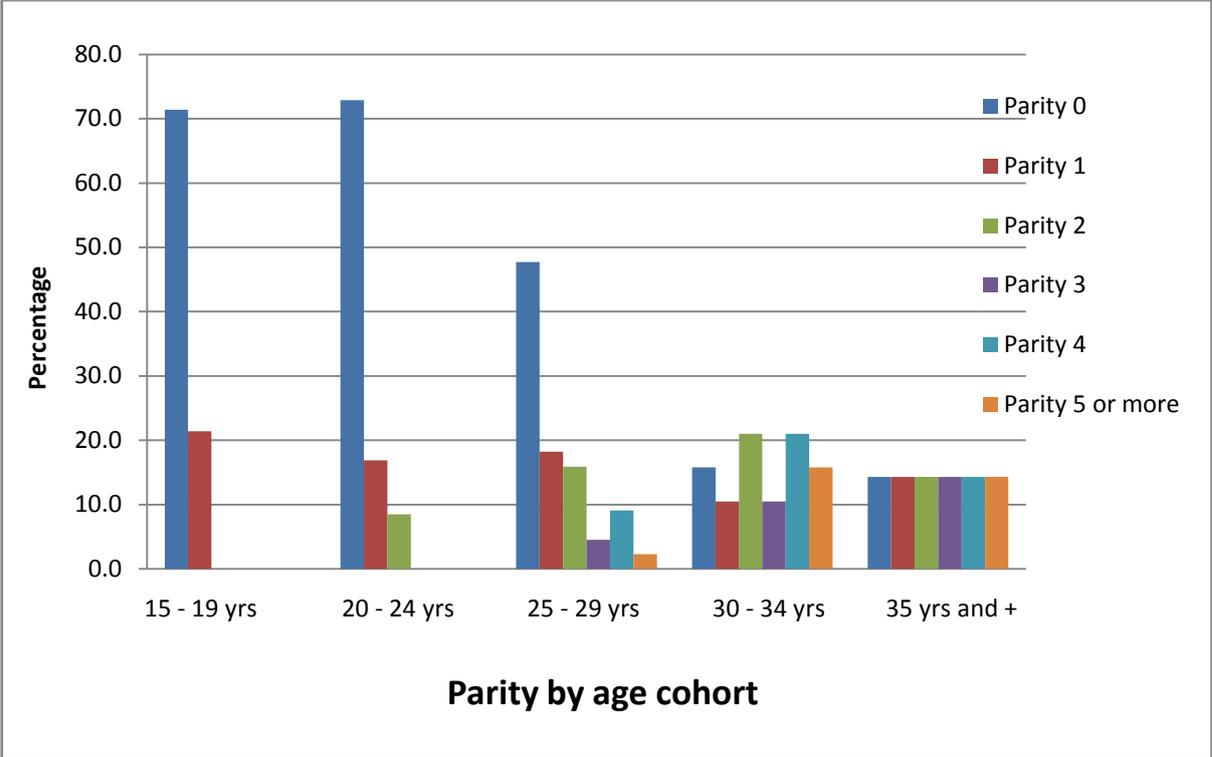


Figure 4.5: Parity of mother by age (n=143)

4.5.3 Gestational age from the antenatal card and patients’ files

Figure 4.6 shows that just under two thirds (n=88; 61.5%) of cases, the gestational age (GA) had missing data/unknown from their files and antenatal cards. For 37 (25.9%) of the cases, the GA ranged from 37 to 40 weeks (the period designated as ‘term’ pregnancy); 4 (2.8%) had GA of 36 weeks, 41–42 weeks were 9 (6.3%) and those above 42 weeks were 5 (3.5%). This finding of a substantial percentage (n=88; 61.5%) of missing GA is reason for concern. It indicates an insufficient level of alertness and inadequate performance on the part of the health care workers. In the majority of cases the information is not taken and in some it could mean that the mother was not sure about her LMP, but such could have been indicated. Determination of gestational age is vital because it provides valuable information regarding expected or potential problems and directly affects the medical treatment plan for the baby. It is the precise knowledge of the exact GA that will help the obstetrician to formulate a decisive plan for a particular mother and a very important factor in assessing infant mortality risk (WHO

2006b:section 16:2, 4). The importance of awareness of the gestational age is considerable. Without it the obstetrician cannot know when the foetus is mature enough to be born, whether problems of prematurity should be expected after delivery or if the pregnancy is post-term and labour should be induced. So this is a serious omission on the part of the obstetric team of the selected site.

One of the challenges that the researcher encountered was the use of interchangeably the Ethiopian and the Gregorian calendar which differ considerably: by seven to 8 years (Ethiopian Calendar [s.a]). The health care workers should use only one calendar in the file to avoid confusion.

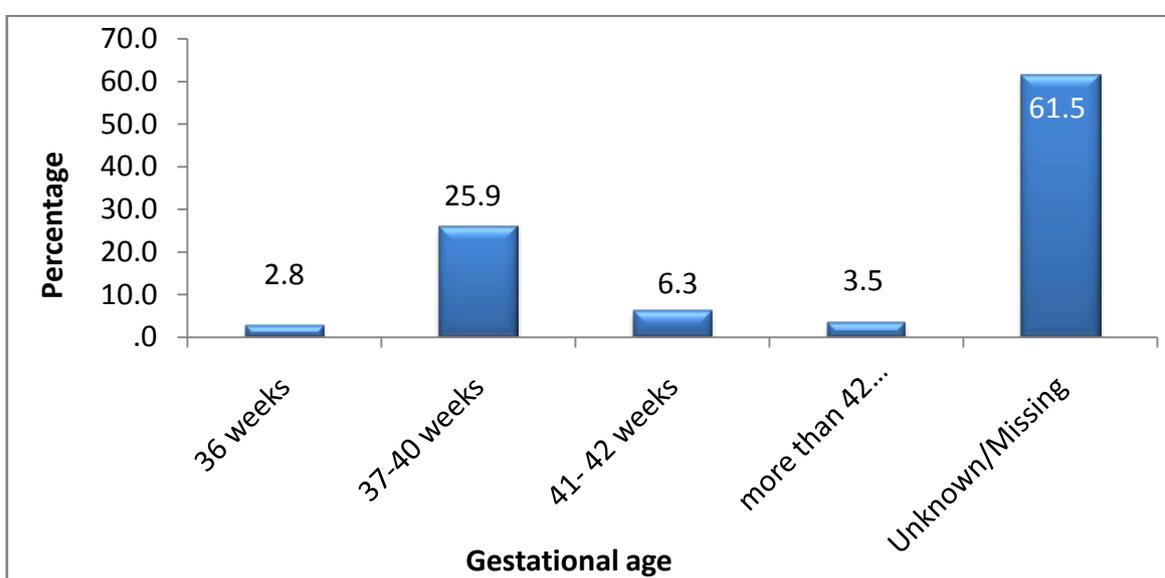


Figure 4.6: Gestational age in weeks (n=143)

4.5.4 Number of antenatal visits

Among the 143 cases, just over one third of participants (n=51; 35.7%) visited the antenatal clinic 4 or more times. Another 49 (34.3%) of the cases visited the ANC 3 times. Respectively 13 (9.1%), 7 (4.9%) and 5 (3.5%) of the cases did the mother visit the ANC twice, or only once, or not at all. For 18 (12.6%) of the mothers the data were missing or it was unknown how often the ANC was attended as shown in figure 4.7.

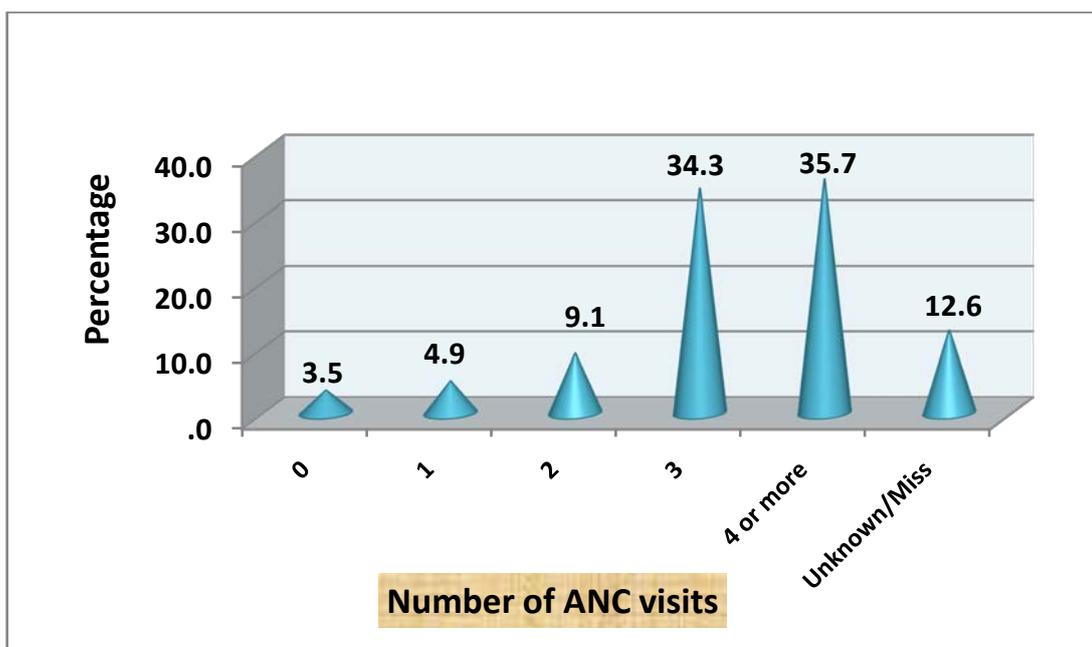


Figure 4.7: Number of antenatal visits (n=143)

4.5.5 Mode of delivery

Of the 143 cases the majority 140 (97.9%) were delivered by Caesarean Section (C/S) and 3 (2.1%) underwent a destructive operation. These findings concur with studies done elsewhere and in Ethiopia. Shimelis et al (2010:149) study in the south of Ethiopia regarding the management of obstructive labour reported that 87.1% of cases were delivered by C/S and 12.9% by destructive delivery. Omole-Ohonsi and Ashimi (2007:60) found in their study in Kano, North Nigeria that for 102 cases of obstructed labour 99% of them were managed by C/S and only 1% had a destructive operation. Islam, Ara and Choudhury (2012:45) in Bangladesh observed among 132 women with obstructed labour that 16.1% underwent a foetal destructive operation to deliver the baby and the remaining 83.9% had a C/S or laparotomy if there was suspicion of ruptured uterus. Clearly, the choice between the two procedures rests on the viability of the baby.

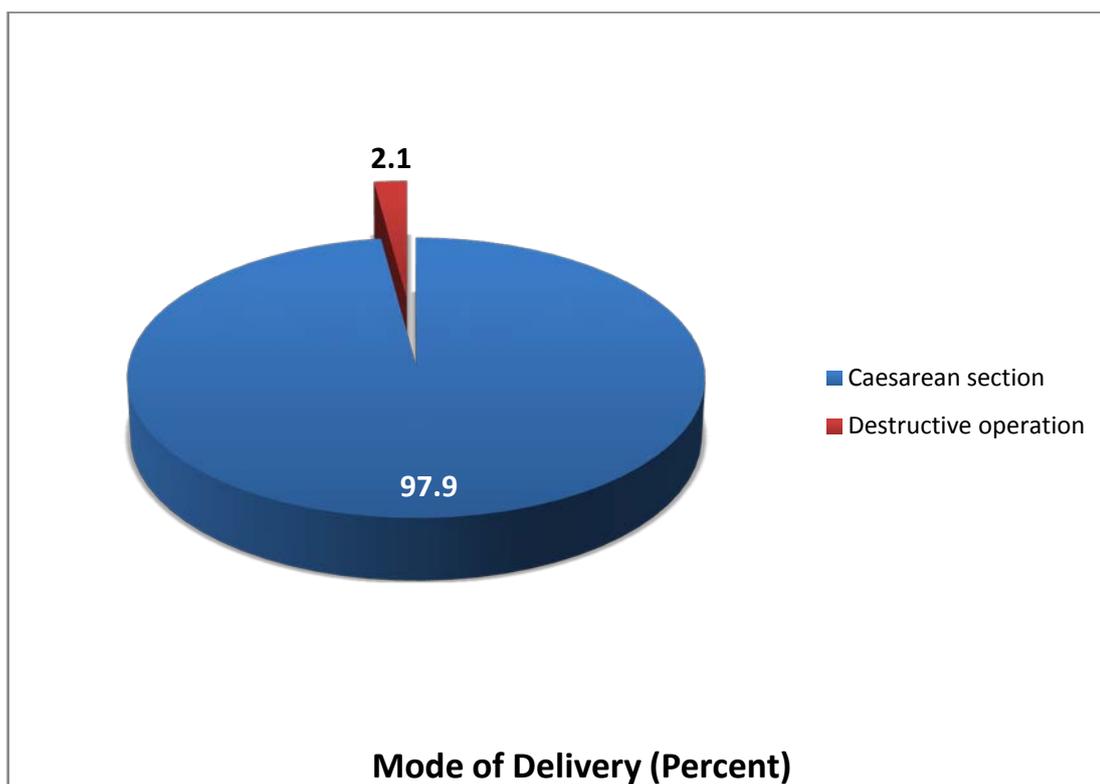


Figure 4.8: Mode of delivery (n=143)

4.5.6 Indication for the mode of delivery

The researcher was also interested to know the reasons for the mode of delivery. This study shows that several different diagnoses were indicated for the decision to perform C/Section in order to save the life of the baby and protect the mother from complications as well. The two main diagnoses were obstructed labour in 91 (63.6%) of the cases and malpresentation for 34 (23.8%). Slight variations on similar situations were: prolonged labour with failed induction (n=12; 8.4%), intra-uterine foetal death with CPD (n=3; 2.1%), ruptured uterus (n=2; 1.4%) and prolonged labour with foetal distress (n=1; 0.7%). These results concur with literature from other studies in other developing countries as well as in Ethiopia. Shimelis et al (2010:148,149) reported that in their study an indication for assisted delivery was CPD (67.6%), malpresentation of the foetus (27.9%), foetal anomaly (4.5%) and pelvic mass (3.4%) that made a normal delivery impossible. In Bangladesh Islam et al (2012:45) observed that 44.8% of women with obstructed labour had CPD and malposition of the foetus was detected in 50.5% of cases and 4.7% had other causes (hydrocephalus of foetus, cervical fibroid).



Figure 4.9: Indication for the mode of delivery (n=143)

4.5.7 Mode of delivery of previous pregnancy

With regard to mode of delivery of previous pregnancy, nearly one third (n=43; 30.1%) previously had a normal vaginal delivery (NVD), only 9 cases (6.3%) had delivered through C/S, for 14 (9.8%) data missing/unknown (see figure 4.10). Since the majority, 77 of women in the study group were primigravid (53.8%) these did not have a previous delivery. Therefore the answer to the question of the mode of the previous delivery for those nulliparous women was “not applicable”.

For the obstetrician and midwives, the history of previous pregnancies and deliveries can be the source of important information and help in the decision making for the mode of delivery for a current pregnancy. The knowledge that a woman had a C/S in the previous pregnancy for CPD might expedite the decision not to let her be in labour for a long time but to safely deliver the baby before serious complications might arise. The researcher noted that most often a real diagnosis was at the basis of the indication for a C/S instead of following the adagio “Once a C/S always a C/S” (Kofinas [s.a]:9). In other settings obstetricians often choose the way that they deem safest which is a repeat C/S. Many others do not agree with that adagio since it causes unnecessary caesareans

(Shroud [s.a]) so the indication should be based on the obstetric history of the mother and the progress of the current delivery.

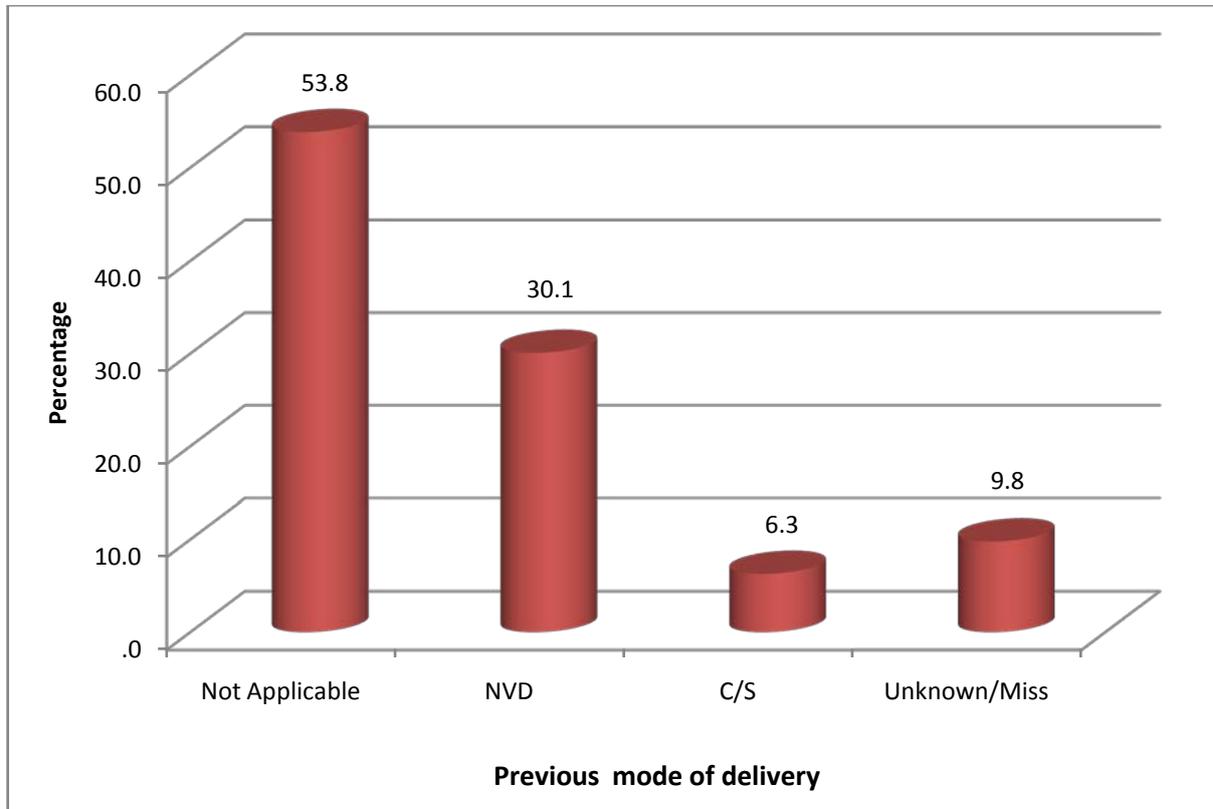


Figure 4.10: Mode of delivery in previous pregnancy (n=143)

4.5.8 Weight at birth

Another indicator for the assessment of the intra-uterine environment for the foetus is the baby's weight at birth. As shown in figure 4.11, of the 146 babies, 52 (35.6%) had a weight between 3000 to 3499 grams, 46 (31.5%) weighed 3500 grams or more, between 2500 and 2999 grams were 28 (19.2%), those between 2000 and 2499 grams were 9 (6.2%) and one baby (0.7%) who was part of a set of twins was born with a weight of 1500 grams. For 10 (6.8%) the weight was not recorded. Thus, in the groups 3000 to 3499 grams and 3500 grams and more 35.6% and 31.5% were recorded respectively, together 67.1%. The representation of the higher birth weights makes sense: the bigger the baby the easier the passage might be inadequate. It also shows that even if the pelvis is inadequate the growth of the baby continues unchanged. Shimelis et al (2010:149) study showed that 85.5% of the babies born of mothers with obstructed labour were in the normal weight group of 2500–3999 grams. A weight of

more than 4000 grams (macrosomia) was found in 8.9% of the cases and for 5.6% was the birth weight low: 1500–2499 grams.

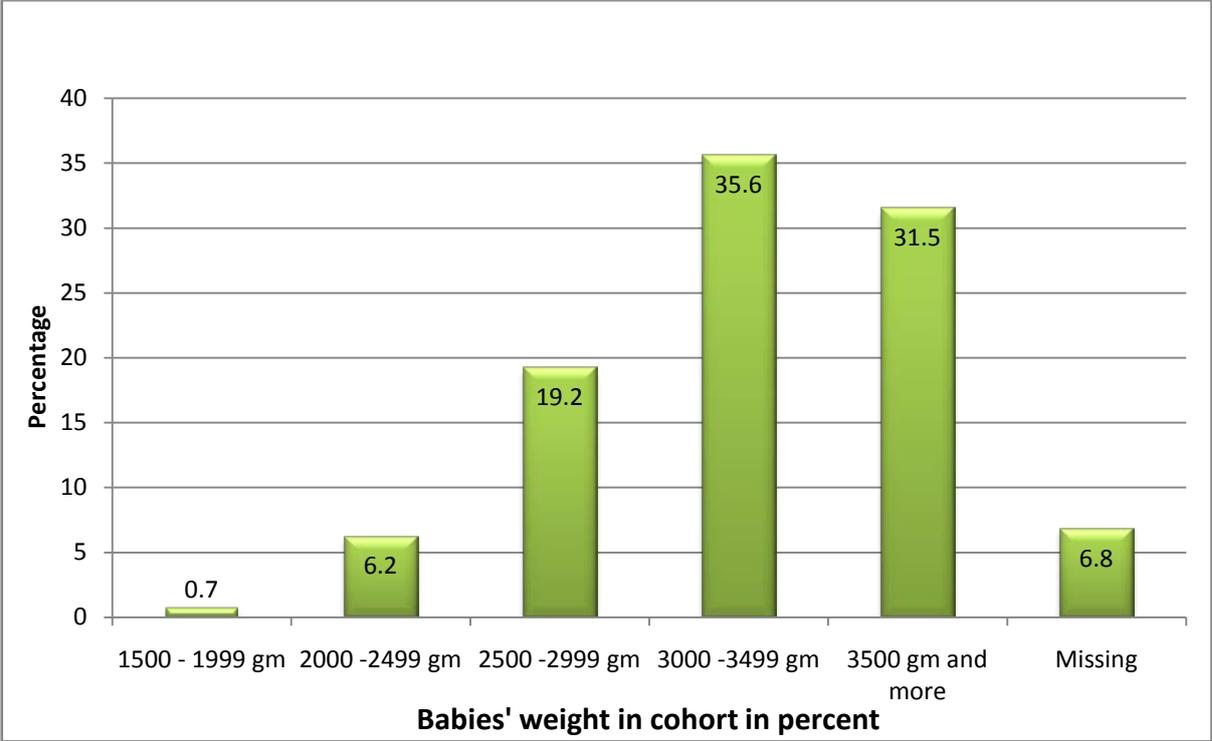


Figure 4.11: Baby’s weight in cohorts (n=146)

4.6 OUTCOMES AND COMPLICATIONS FOR THE BABIES AND MOTHERS

In this section the data relating to the outcome for the mothers and the babies is presented and discussed.

4.6.1 APGAR scores for the babies

The researcher also wanted to know the APGAR scores of the babies as an outcome. The initial evaluation of the baby right after birth is the APGAR score as defined in section Chapter 1 section 4. This score is ideally assessed after 1 and 5 minutes to identify the status of the newborn, to discover immediate problems and monitor the fashion in which the baby responds to resuscitation in case this is administered (American Academy of Pediatrics ... 2006:1444). The APGAR value at 1 minute expresses the situation as it was for the baby during the last phase of the delivery. The values that are considered to indicate a good condition of the baby and sufficient

oxygen supply to the foetus during the last phase of the delivery are scores of 7 and above.

The results as shown in figure 4.12 indicate that 16 (11.0%) of babies had an APGAR score of 7, 21 (14.3%) scored 8, 81 (55.4%) scored 9 and 6 (4.1%) had missing data. The three combined accounted for 80.7%, which indicates a good condition of all these 118 babies.

The APGAR scores of 4, 5 and 6, which indicates an intermediate condition, were obtained by 8 (5.5%), 2 (1.4%) and 2 (1.4%) of cases respectively, thus (n=12; 8.3% combined) which practically means a worrisome condition of the baby. Of the cases in the study 1 (0.7%) scored 2 and 9 (6.2%) scored 0, which means still birth and the baby could not be resuscitated.

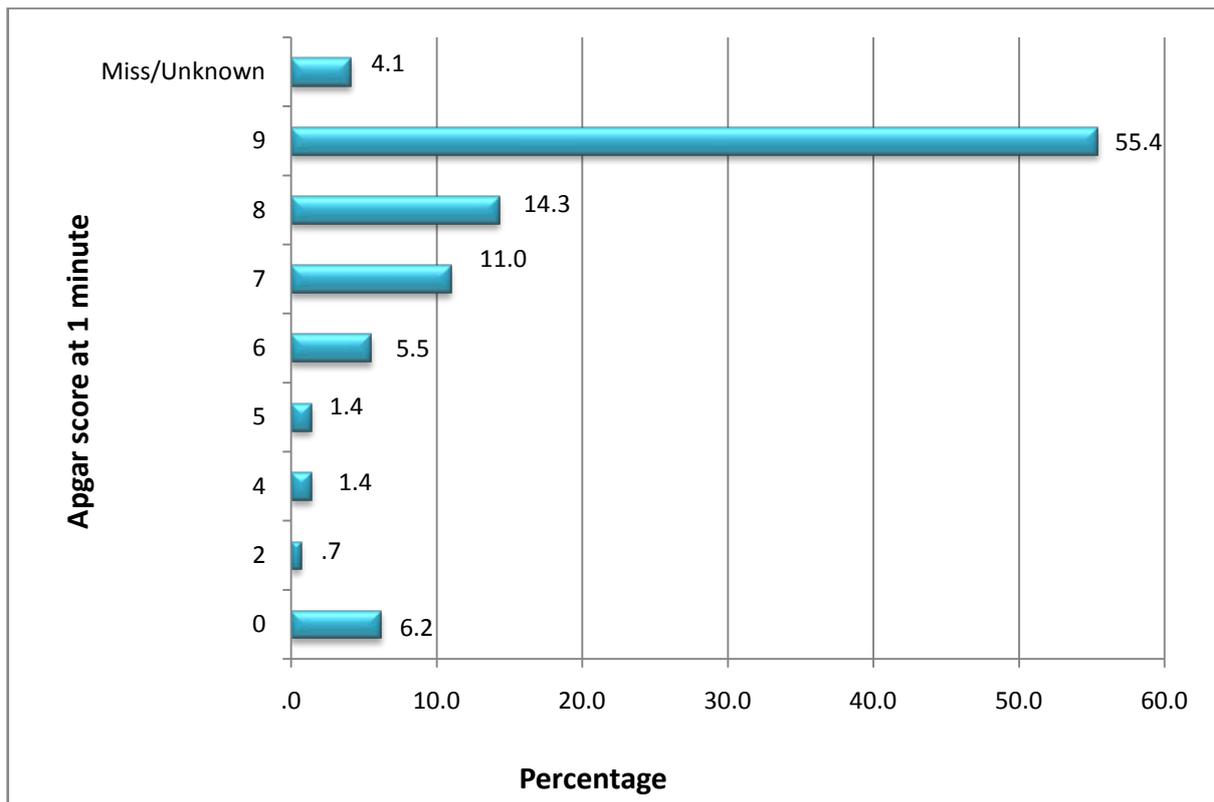


Figure 4.12: Babies' APGAR score at 1 minute (n=146)

In addition, the APGAR scores at 5 minutes were assessed. Figure 4.13 shows the results that 9 (6.2%) babies had an APGAR score of 0, 1 (0.7%) a score of 3, 4 babies scored 6, 8 scored 7, 14 (9.8%) had a score of 8, 53 (36.3%) a score of 9, 50 (34.3%) scored 10. For 6 (4.2%) babies, the data were missing.

Furthermore, the researcher had also included the APGAR score at 10 minutes in the checklist tool. However, during the data collection and analysis it became evident that the data of the APGAR scores obtained at 10 minutes did not yield any additional useful information. These figures showed hardly any changes from the values at 5 minutes after birth. Therefore this variable was excluded from the findings.

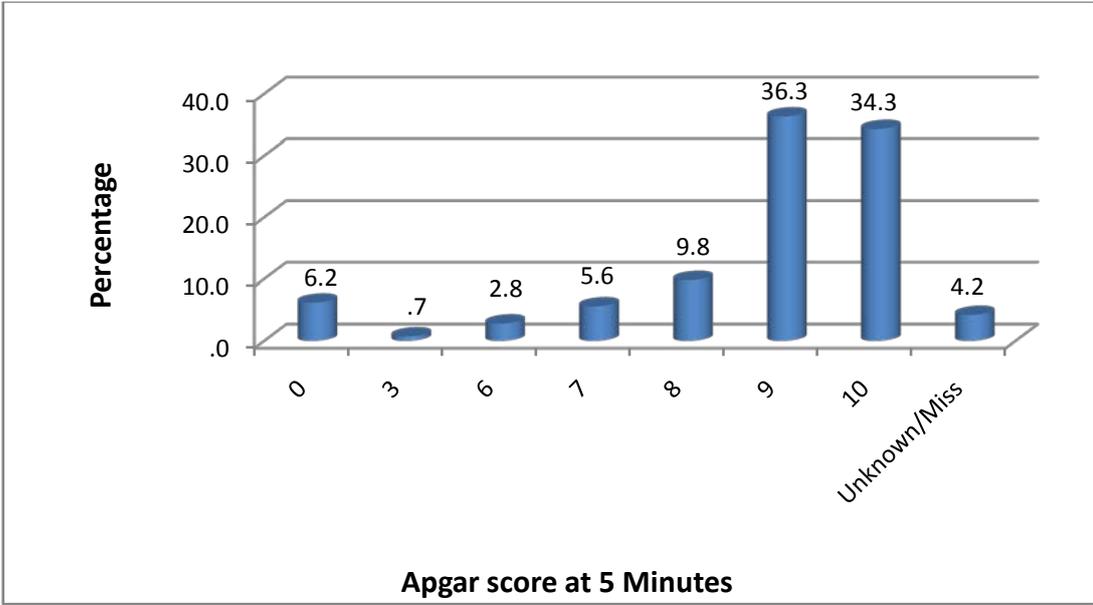


Figure 4.13: Babies’ APGAR score at 5 minutes (n=146)

4.6.2 Complications for the mother

The researcher was also interested to know if both mothers and babies had any post-procedural complications (see objective 2 in chapter 1) of this study.

Of the 143 cases, the majority (n=114; 79.7%) did not from suffer any physical complications, 14 (9.8%) had serious consequences such as sepsis, ruptured uterus resulting in death due to the moribund condition on arrival (n=2; 1.4%), serious haemorrhage that required transfusion of several units of blood (n=2; 1.4%), 1 (0.7%) had another complication (respiratory tract infection with cardiac failure) and 10 (7.0%) had unknown status/missing data since nothing was written regarding the post-procedural condition of the mother as shown in figure 4.14.

This is to be considered as an unfortunate omission since obstructed labour is a serious condition and needs diligent follow up and monitoring also after the obstetrical intervention which is usually surgical with the possible postoperative complications.

These findings are consistent with Islam et al (2012:43) in Bangladesh who found a maternal mortality among women with obstructed labour of 1%. Gessesew and Mesfin (2003:176) reported a maternal mortality of 3.3% among the women with obstructed labour in North Ethiopia, Asheber (2002:16, 17) in his study of obstructed labour found a maternal mortality of 9.1% in Jimma in the Southern part of the Ethiopia as well and Omole-Ohonsi and Ashimi (2007:62, 63) in Kano, Nigeria, observed a 1% maternal mortality.

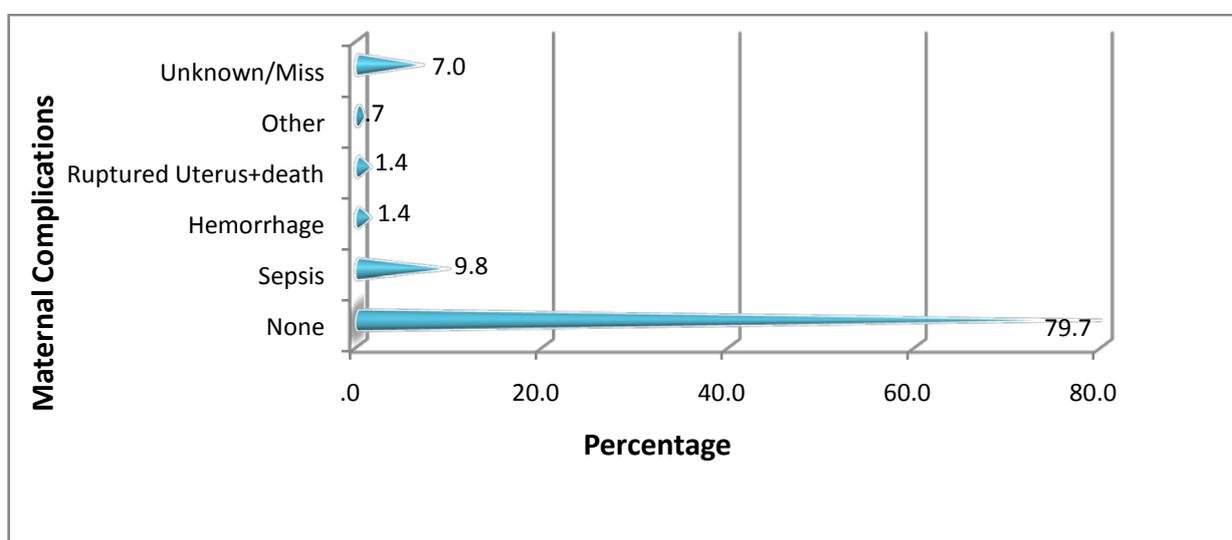


Figure 4.14: Complications for the mothers (n=143)

4.6.3 Correlation between mother's outcome/complications and maternal age

Further analysis on correlation between maternal complications and the age was done. As shown in figure 4.15, within the cohort 15–19 years 11 cases (79%) had no complications, 3 (21%) had sepsis, and none for haemorrhage, ruptured uterus and other complications. Among those between 20–24 years 50 (85%) had no complications, sepsis in 5 cases (8.4%), and 1 case (1.6%) had another complication (respiratory tract infection with cardiac failure), 3 (5.0%) had missing data. There was no haemorrhage or ruptured uterus in this age group. Within the cohort 25–29 years 33 (75%) of the cases had no complications, sepsis was observed in 5 (11%),

haemorrhage in 2 (4.6%), ruptured uterus in 1 (2.3%) resulting in death and missing data 3 (7%). Between the age range 30-34 years 15 (79.0%) had no complications, 1 (5.0%) had ruptured uterus and died, missing data was observed in 3 (16.0%) and there were no other observed complications such as haemorrhage or sepsis in this group. Within the cohort 35 years and above 5 (71.5%) had no complications, 1 (14.3%) had sepsis, 1(14.3%) had unknown data and in this group haemorrhage, sepsis and other complications were not recorded. Therefore, in total, 114 (79.7%) of the cases had no complications, sepsis 14 (9.8%), ruptured uterus (n=2; 1.4%) resulting in death on arrival due to the moribund condition, haemorrhage 2 (1.4%), 1 case (0.7%) had respiratory tract infection with cardiac failure and 10 cases (9.8%) had unknown status/missing data since nothing was written regarding the post-procedural condition of the mother. These results were not found to be statistically significant at 5% significance level ($\chi^2=17.8$, $df=20$, $p=0.603$). Studies related to maternal age either concentrate on advanced maternal age and outcome for the baby in the sense of disorders (either hereditary or congenital) of the foetus during the pregnancy, the increased incidence of miscarriage and still birth, but not related to a negative outcome because of complications during delivery (Cleary-Goldman, Malone, Vidaver, Ball, Nyberg, Comstock, Saade, Eddleman, Klugman, Dugoff, Timor-Tritsch, Craigo, Carr, Wolfe, Bianch, & D'Alton 2005:983, 986). Rajaei, Amirzadeh and Soltani (2010:159-161) state that maternal age at the two extremes affect the outcome of pregnancy, as to an increased risk of preterm labour, placenta praevia and low birth weight among the young mothers (<18 years) and an increased risk of abortion, eclampsia, abruption placentae, macrosomia and C/S in the women above 35 years.

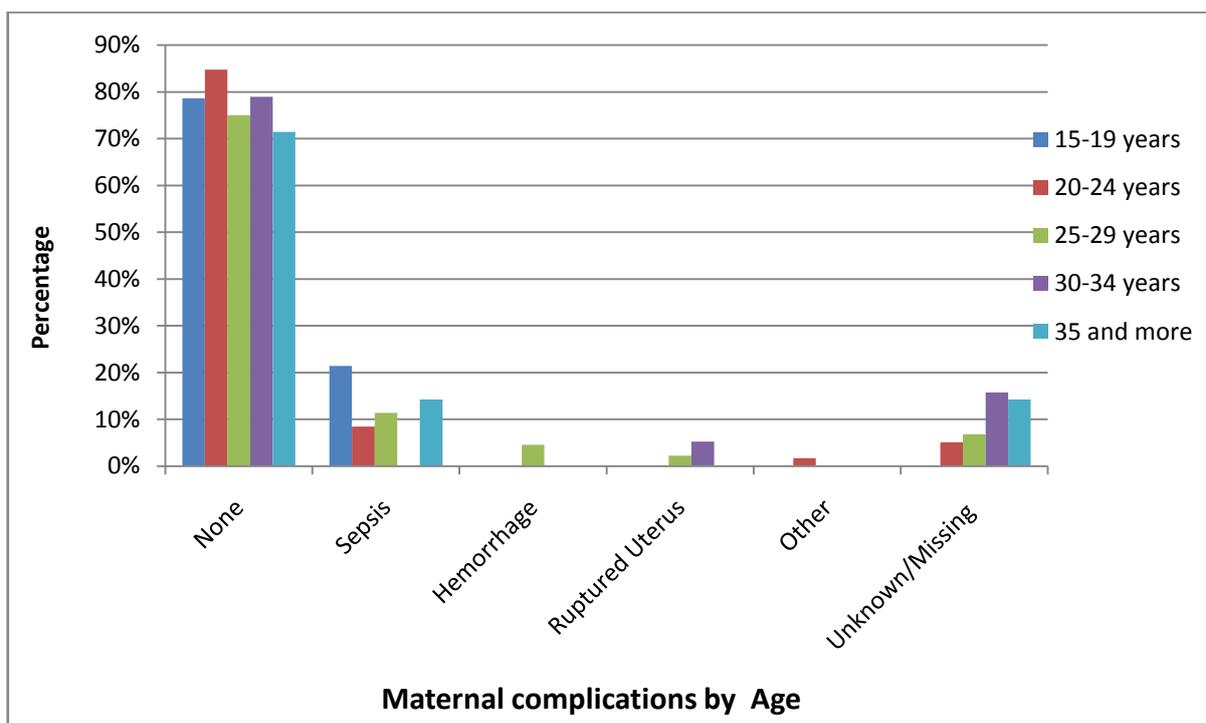


Figure 4.15: Maternal complications by age of the mother (n=143)

4.6.4 Correlation between parity and maternal complications

In addition, the researcher was also interested to find out whether there is any relationship between mother's parity and maternal complications. Figure 4.16 indicates that para 0 cases (n=62; 79.5%) had no complications, sepsis was observed in 11 (14.1%) cases, there were no cases of haemorrhage nor ruptured uterus, 1 (1.3%) had another complication and 4 (5.1%) had unknown/missing data. Among the para 1 cases, 21 (87.5%) did not have any complications, 1 (4.2%) had sepsis, none had haemorrhage, ruptured uterus or other types of complications and 2 (8.3%) had missing data. With regard to para 2, those without complications were 14 (82.3%), sepsis, ruptured uterus and unknown/missing data were 1 each (5.9% each) respectively and none had haemorrhage or other complications. Within the cohort of para 3, it was noted that 3 (60.0%) remained without complications, haemorrhage and missing data was noted in 1 each (20.0%). Among the para 4, the results show that 7 (77.8%) were without complications, 1 (11.1%) had haemorrhage as well as missing data (n=1; 11%) and none of the cases had sepsis, ruptured uterus or other complications. Regarding para 5 or more, 2 (40%) had no complications, sepsis, ruptured uterus and missing data each had 1 (20%) of the cases and haemorrhage and other complications were not

reported. A chi-square test was applied and it showed that statistically the results were significant at 5% significance level ($\chi^2=47.6$, $df=30$, $p=0.021$). Asheber (2002:11, 13) reported that especially nullipara and grand multiparous women were at risk for obstructed labour and its complications for the mothers as well as the children. Gessesew and Mesfin (2003:178) reported that in their study in Northern Ethiopia the complications for both mother and baby significantly increased with higher parity.

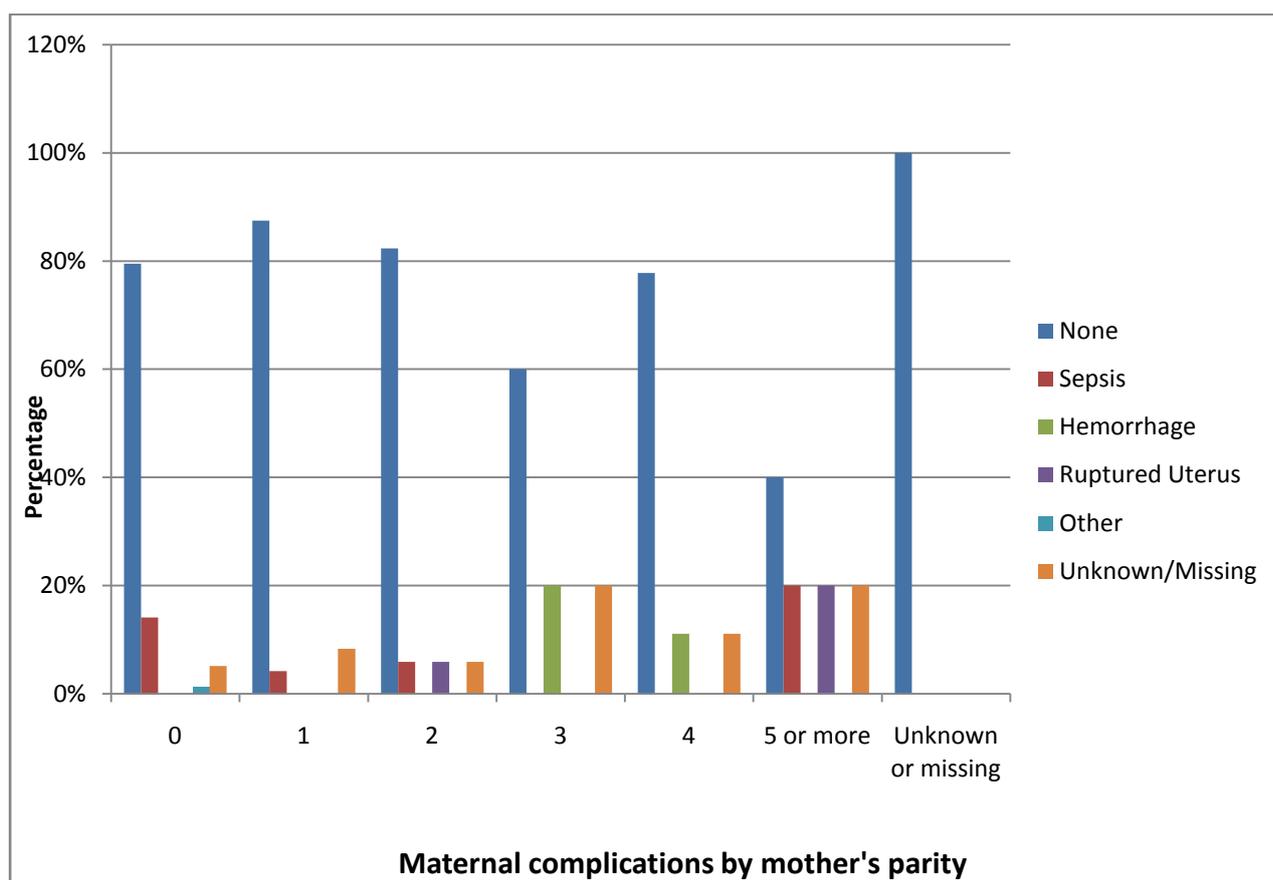


Figure 4.16 Maternal complications according to parity (n=143)

4.6.5 Complications for the foetus

With regard to foetal complications, figure 4.17 shows that the majority (n=111; 76.0%) of the babies had no complications at all immediately after delivery. In 15 (10.3%) cases serious infection (sepsis) occurred which needed adequate treatment with intravenous or intramuscular antibiotics, 11 (7.5%) were born in very poor condition with low APGAR score and in 9 (6.2%) of the cases, the data were missing.

A perinatal mortality of 7.5% stands in contrast with the outcome for babies in other studies of obstructed labour. In some regions of Ethiopia, Gessesew and Mesfin (2003:178) observed a perinatal mortality of 55.5% among babies born from a group of women with obstructed labour. Shimelis et al (2010:145) in their study in Jimma, Ethiopia reported a perinatal mortality of 54.2% of all babies included in the study. Omole-Ohonsi and Ashimi (2007:59) in Kano, Nigeria, found a perinatal mortality of 52.9%. Islam et al (2012:43) noted a perinatal mortality of 24.7% among the studied group of women with obstructed labour in Bangladesh.

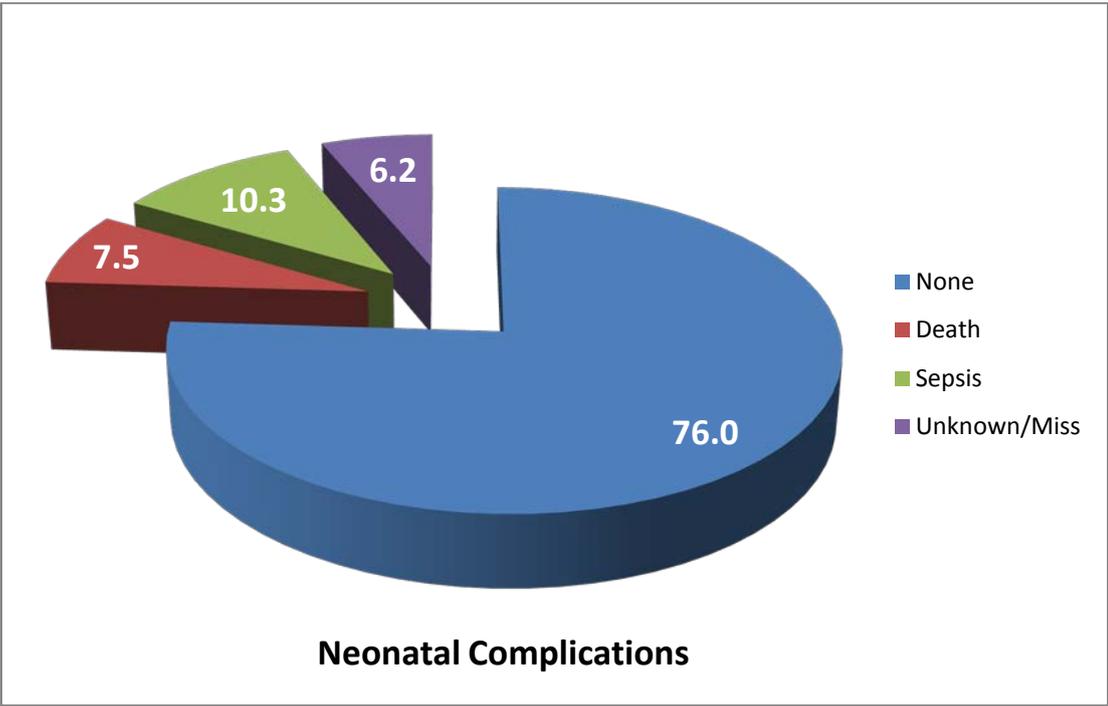


Figure 4.17: Complications for the babies in percentage (n=146)

4.6.6 Correlation between maternal age and baby’s outcome/complications

Further analysis on the relationship between maternal age and baby’s outcome also showed that 5 out of 14 (35.7%) of the babies born from young mothers in the age group between 15–19 years experienced high risk of complications, thus (death n=3; 21.4% and sepsis n=2; 14.3%). Those with complications in this cohort were 9 (64.3%). For the age groups 20–24 years the incidence of neonatal complications was 11 out of 59 (18.6%). There were 4 (6.8%) deaths and 7 (11.8%) sepsis. Among the cases in the cohorts of 25–29 years and 30–34 years and the group 35 years and above those incidences of neonatal complications were as follows: (n=6 out of 44, 13.6%; n=2 out of

19, 10.5% and n=1 out of 7; 14.3%) respectively. For the entire group of women and babies included in the study the incidence of complications for the newborn babies was 25 out of 143 (17.5%). However, this finding was not statistically significant at 5% significance level (χ^2 11.6, df=12, p=0.478).

Contrary to these findings, a recent study in South-Africa, KwaZulu-Natal by Hogue, Hogue and Kader (2010:1, 2) established that teenage pregnancies were not associated with higher perinatal mortality and in fact showed a lower incidence for C/S rate and stillbirths than among older women. Kirchengast (2009:5) reported that for teenage pregnancies obstetrical complications were generally mainly due to socio-economic factors, rather than related to chronological age.

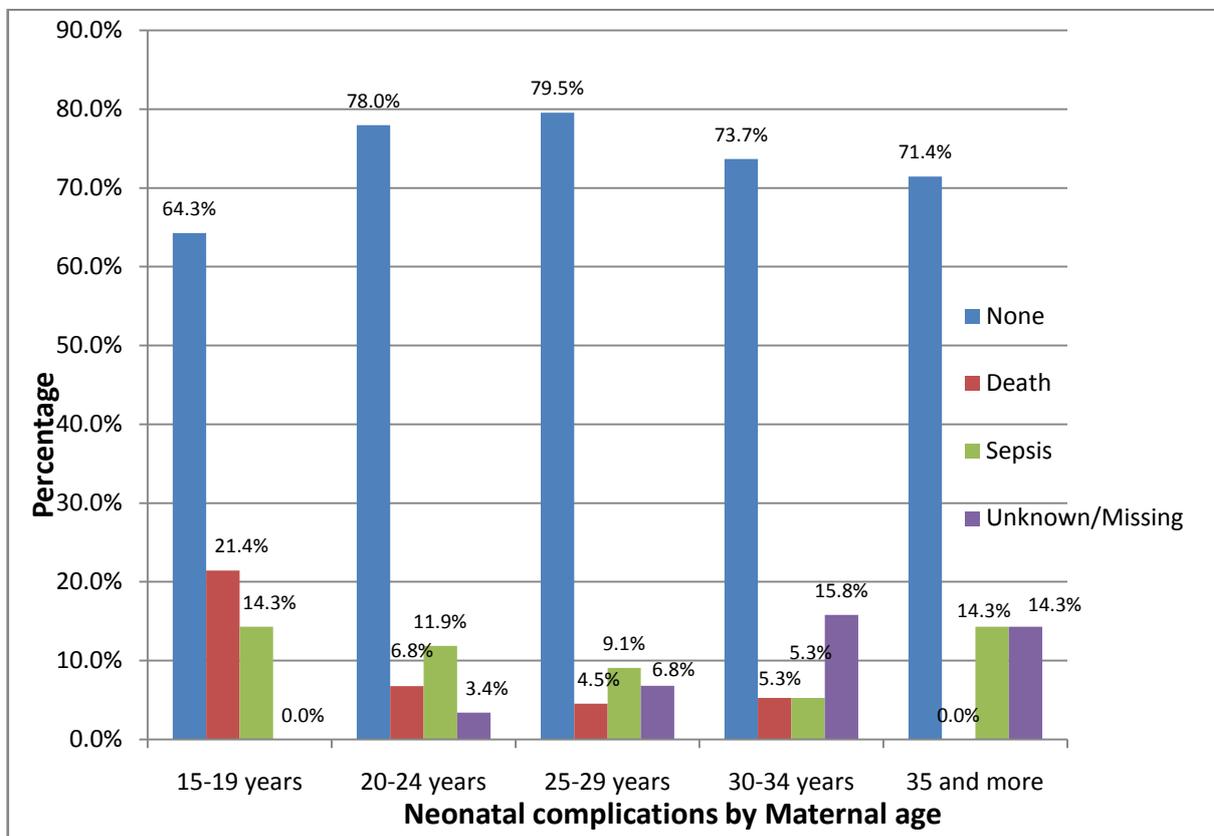


Figure 4.18: Neonatal complications according to mother’s age (n=143)

4.6.7 Correlation between Neonatal complications and the number of ANC visits

During further statistical analysis a correlation was sought between the number of ANC visits the mothers made during their pregnancies and neonatal complications.

It was observed that for those cases without any ANC visit, 2 (40.0%) of the new-born died, 2 (40.0%) had no complications, 1 (20.0%) had sepsis and there was no missing data. For those with 1 ANC visit, 1 (14.3%) had sepsis, 1 (14.3%) missing data, and 5 (71.4%) without complication. However, for those with 2 ANC visits, there were 2 (15.4%) deaths, 4 (30.8%) cases of sepsis and 7 (53.8%) had no complications and no missing data. Among those cases with 3 ANC visits, there were 2 (4.1%) deaths, 2 (4.1%) sepsis, 5 (10.2%) had missing data and 40 (81.6%) without complications. For those with 4 or more visits, it was noted that there were 3 (5.9%) deaths, 5 (9.8%) sepsis, 2 (3.9%) had missing data and 41 (80.4%) had no complications. These differences were not statistically significant at 5% significance level ($\chi^2=23.4$ df=15, $p=0.075$) as shown in figure 4.19.

However, contrary to the findings in this current study, literature has shown that the frequency of antenatal clinic attendance has a clear correlation with the outcome for both mother and child. Lawn and Kerber (2006:53, 54) mentioned that ANC visits directly and indirectly save lives of women and children. Additionally, the benefits of ANC visits go well beyond the avoiding of mortality alone and give ample opportunity to promote and establish good health related to pregnancy, childbirth, the post natal period as well as health in general. Lawn and Kerber (2006:56) further expressed that ANC visits bring families in contact with the health system and provide an entry point for the family into that system.

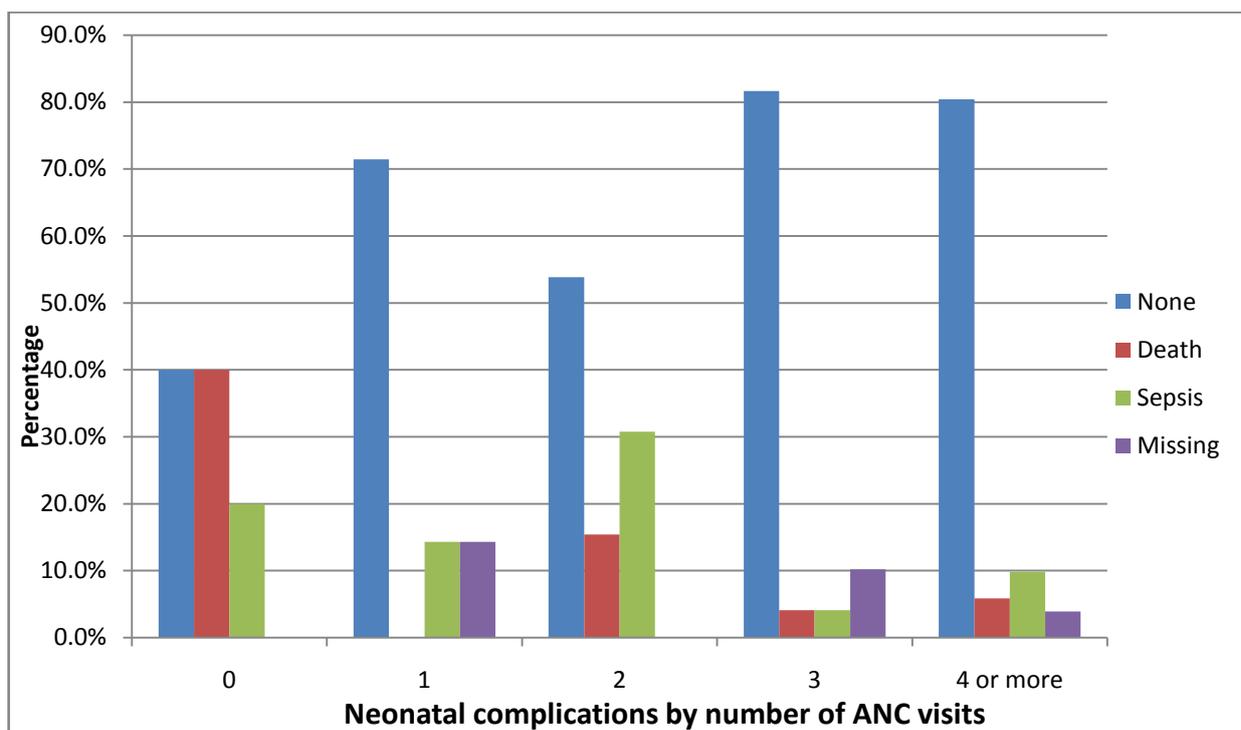


Figure 4.19: Neonatal complications according to number of ANC visits (n=146)

4.6.8 Neonatal complications according to the mother's parity

Figure 4.20 shows that among para 0, 57 (73.1%) had no complications while 5 (6.4%) resulted in death, 12 (15.4%) had sepsis and 4 (5.1%) had unknown/missing data. Within the para 1 cohort, there was 1 (4.2%) death, 1 (4.2%) sepsis and also 1 (4.2%) unknown/missing data. It was noted that 21 (87.4%) had no complication. With regard to para 2, there were 2 (11.8%) deaths, 1 (5.9%) missing data and 14 (82.4%) were without complications. Among the para 3, only 1 (20.0%) had sepsis and also 1 (20.0%) missing data with 3 (60.0%) who had no complications. Para 4, there was 1 (11.1%) death, 11 (11.1%) missing data and 7 (77.8%) without complications. Within the cohort group of para 5 or more, there was 1 (20.0%) death, 1 (20.0%) sepsis, 1 (20.0%) missing data and 2 (40.0%) without complications. Therefore, it can be concluded that overall, or in total, for all mothers regardless of parity the incidence of complications for the baby was 26 out of 143 (18.2%) of their babies suffered serious complications.

Statically there is no significant differences between the parity of the mother and neonatal complications in the current study ($\chi^2=15.7$ df=18, p=0.608). This might be due to the low number of mothers in certain parity categories.

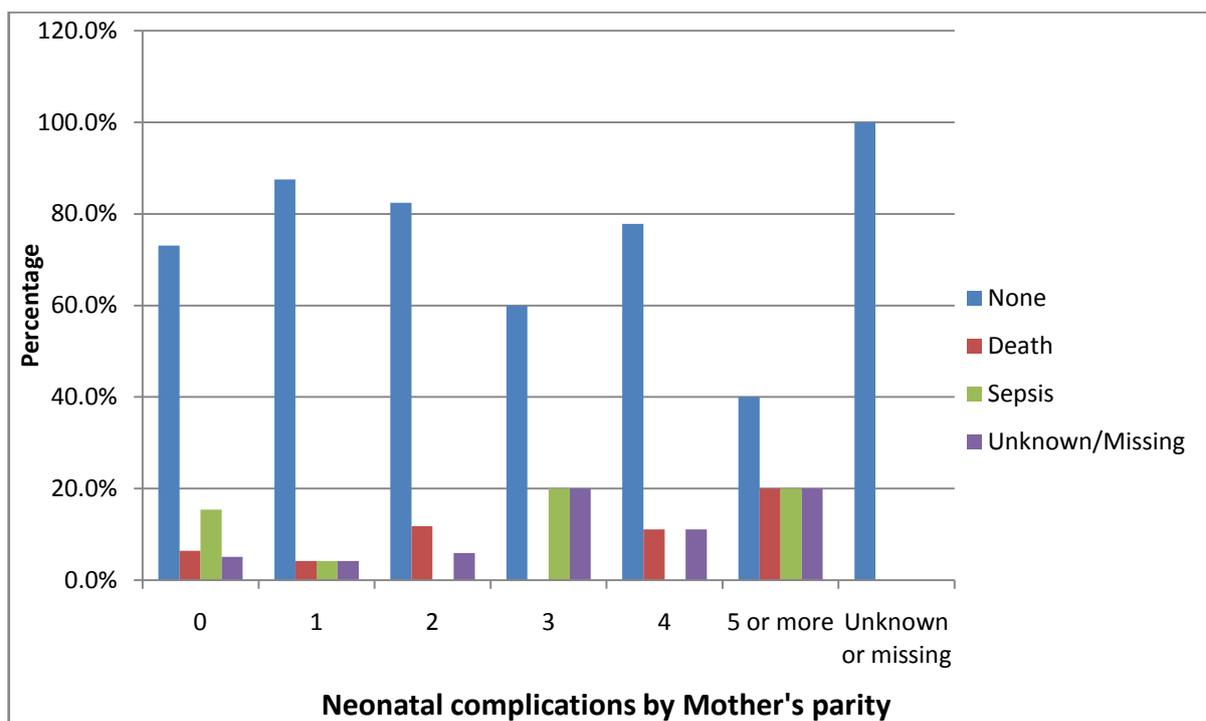


Figure 4.20: Neonatal complications within a parity cohort (n=143)

4.7 FREQUENCY OF THE USE OF THE PARTOGRAPH

In this section the completeness of the utilisation of and recording in the labour ward file, in particular the partograph or partogram was assessed. The researcher checked the files of the women included in the study on how the partograph was being utilised during labour. In the partograph several variables related to the condition of the mother, the position and status of the baby, as well as the progress of the labour process have to be frequently monitored and recorded (WHO 2008b:55, 56). A scanned copy of a partograph is attached (see annexure 5).

4.7.1 Usage of the partograph by the midwives

As shown in figure 4.21, as many as 97, (67.8%) of the cases, the partograph was not utilised, it was entirely left blank. It became evident that in about a quarter of all cases (n=36; 25.2%) the partograph was only being used partially, but not completely filled. Merely in 6 (4.2%) of all the files the partograph was filled correctly and completely. In 4 (2.8%) of the files the partograph was not included/missing in the patients' folder, therefore the researcher could not do the assessment. This implies that in total 133 (93.0%) of the cases, the partograph was not correctly or completely utilised.

The partograph is the key tool and diagnostic instrument by excellence to determine when the progress of labour is prolonged or obstructed (Mathai 2009:256; WHO 2008b:46, 47). Through this visually constructed sheet the health care provider can easily notice the progress of the labour – or the lack thereof. Diligent usage of this instrument will therefore shorten the time to the diagnosis of prolonged and obstructed labour and facilitate a prompter intervention which could only diminish the complications for both mothers and babies (Engida, Berhanu, Ayale & Nebreed 2013:18). Therefore the lack of correct use of the partograph hinders the health care provider to arrive at a timely and potentially life-saving diagnosis.

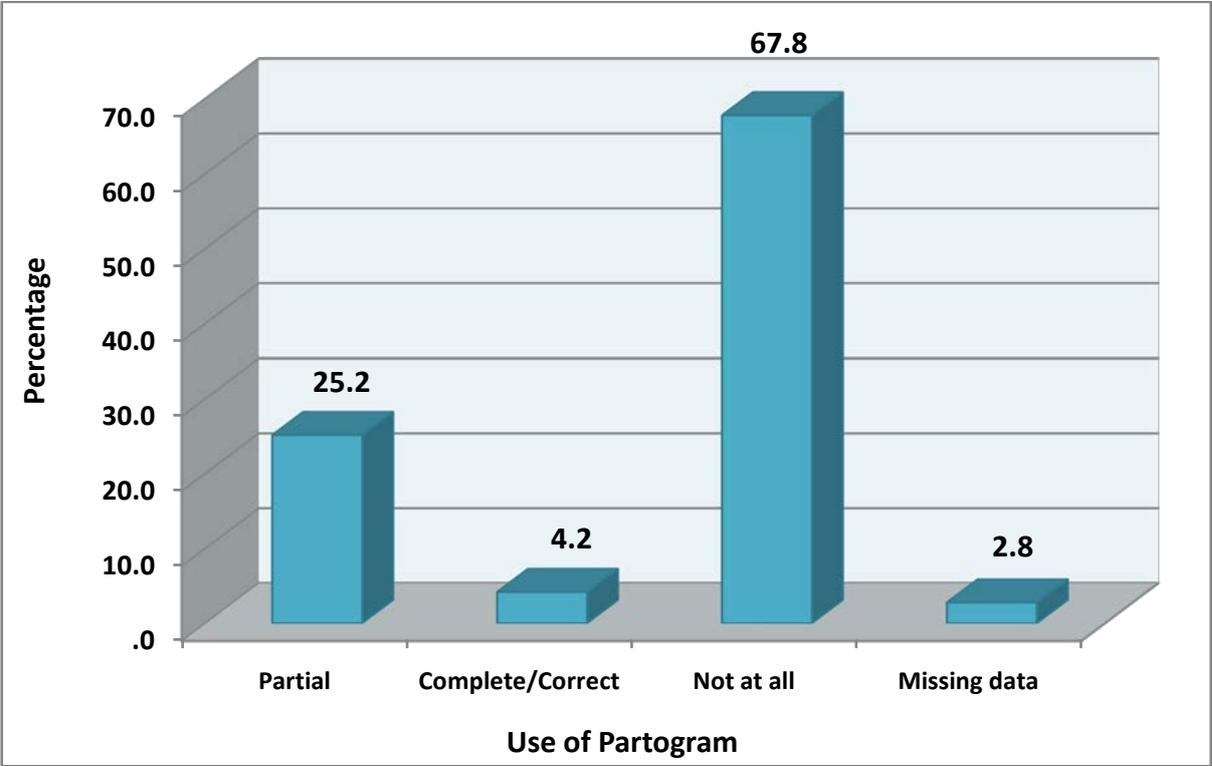


Figure 4.21: Usage of the partograph (n=143)

These findings corroborate with several studies done elsewhere. In Malawi, in two maternity units in Lilongwe, Khonje (2012:2, 3, 63) found that that of 464 partographs only 3.9% was correctly filled. Additionally she expressed that among 9 parameters included in the partograph none was completely and correctly recorded in more than 5% of the files, ranging from 1% to 4%. Khonje concluded that many chances of timely detection of problems were therefore missed.

In Addis Ababa, Ethiopia, Engida et al (2013:24) indicated that among 194 obstetric care givers in public health institutions only 39% of them had a good working knowledge of the partograph and even fewer made use of it during labour monitoring.

4.7.2 Correlation between partograph usage and mothers' complications

Further analysis with regard to association between the use of partograph by the healthcare workers and mother's complications showed that among the cases with a fully completed partographs all 6 cases (100%) did not suffer from any complications. For mothers with a partially used partogram 30 (83.3%) had no complications, and 1 case each (2.8%) of sepsis, haemorrhage, and ruptured uterus were recorded. For 3 of the cases (8.3%) data relating to maternal complications were missing. If the partograph was entirely unutilised 77 cases (79.4%) were free from complications, 13 (13.4%) had sepsis, 1 case each (1%) had haemorrhage, ruptured uterus or another complication (respiratory plus cardiac failure). For 4 (4.1%) data were missing concerning maternal complications (see figure 4.22). The results were statistically significant ($\chi^2=35.981$, df 15 $p<0.002$) at the 5% level of significance.

Khonje (2012:75-77) study concluded that in the maternity centres in Malawi there was a significant association between correct monitoring and recording of the partograph and the mode of delivery, stating that more instrumental deliveries were necessary due to incorrect usage of the partograph.

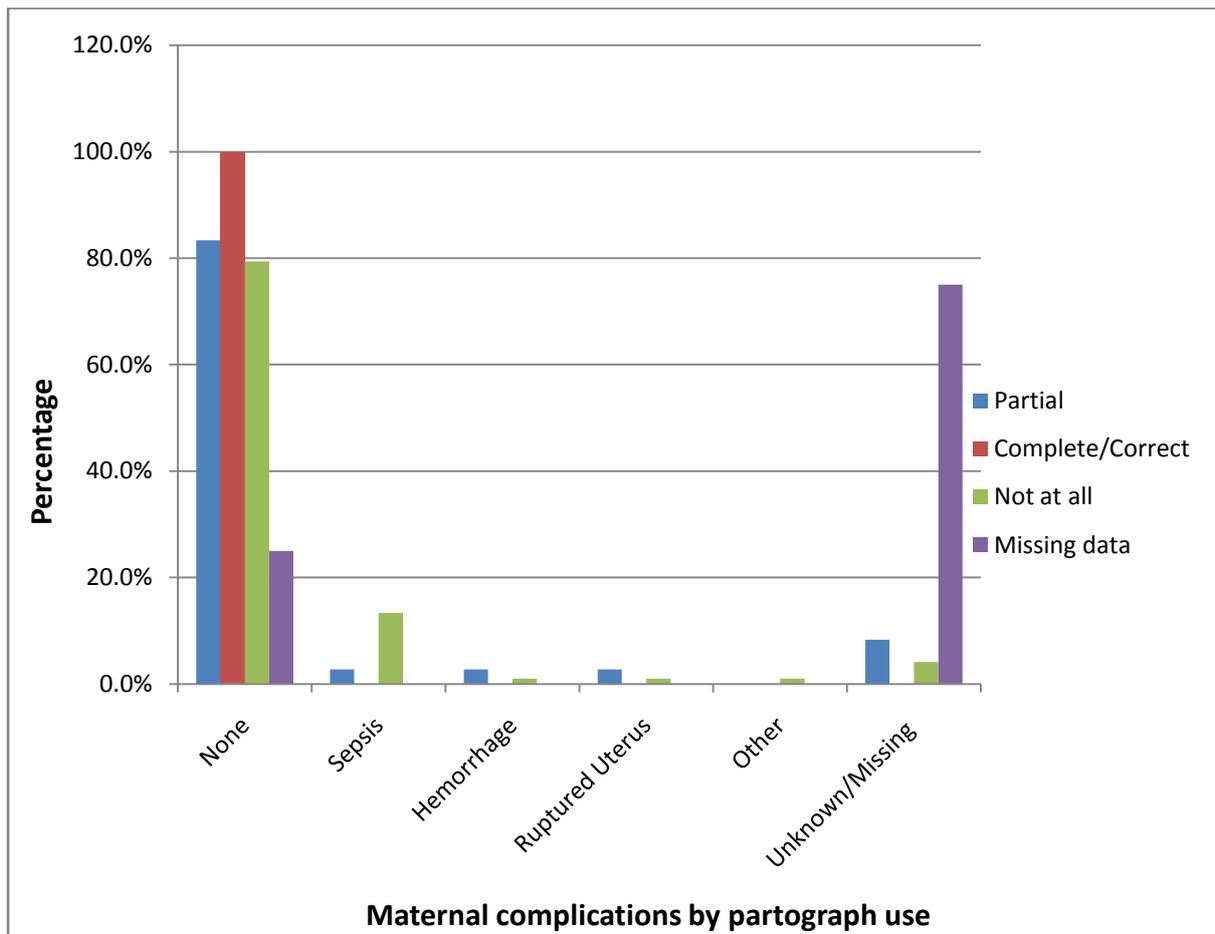


Figure 4.22: Partograph usage and maternal complications (n=143)

4.7.3 Correlation between partograph usage and neonatal complications

Similarly, a correlation was found between the complications in the newborn babies and the quality of usage of the partogram. For babies born from mothers with a completely used partograph 5 (83.3%) had no complications, only 1 (16.7%) suffered from sepsis. Among cases with only a partially filled partograph 29 babies (78.4%) had no complications, 2 (5.4%) died, 3 (8.1%) had sepsis and for another 3 (8.1%) data for complications were missing. Those babies born from mothers with an entirely unused partograph 74 (75.5%) had no complications, 8 (8.2%) died, 11 (11.2%) had sepsis and for 5 (5.1%) data relating to neonatal complications were missing as shown in figure 4.23. According to the Pearson Chi-square test this correlation between usage of partograph and incidence of neonatal complications was statistically significant (χ^2 34.530, df 9, p=.000).

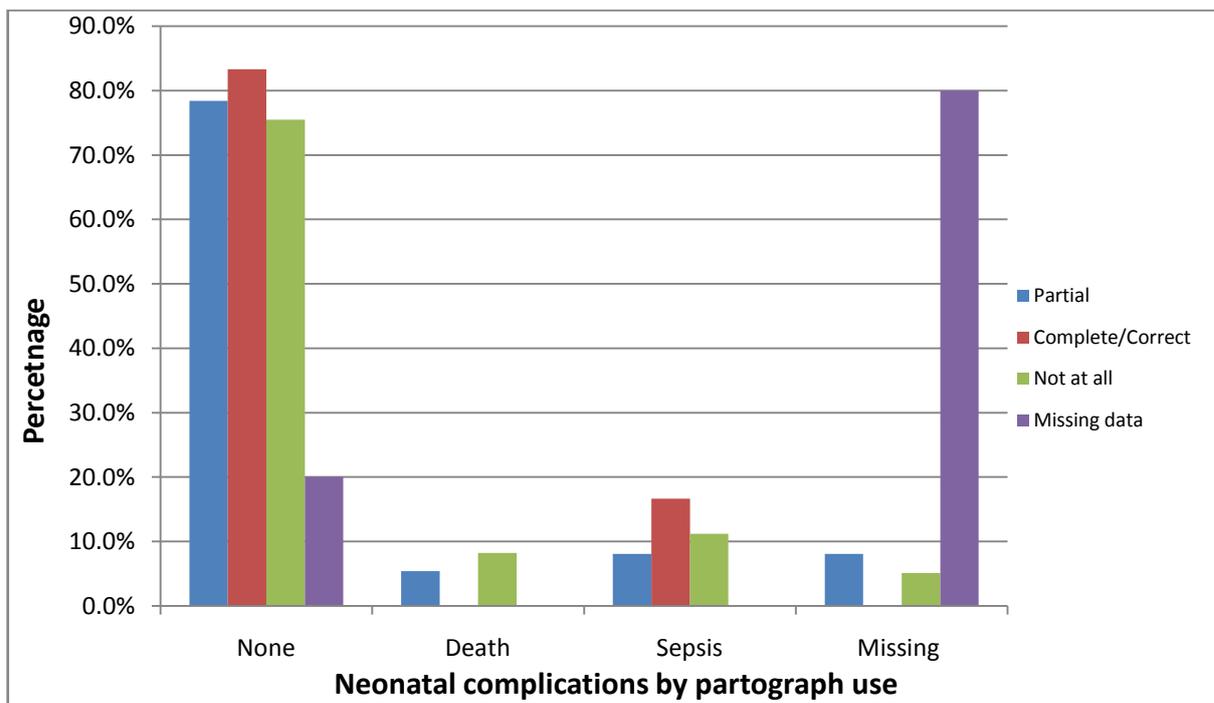


Figure 4.23: Partograph use and complications in the newborn (n=146)

Carefully monitoring of the foetal heart rate (which is only one of the many parameters on the partograph), the neonatal mortality could be reduced by 59.6% (Khonje 2012:2, 78). According to Engida et al (2013:17, 25), among obstetric care givers in Addis Ababa, Ethiopia, 97.9% of the health care workers were fully aware of the usefulness of the partograph as a decision making tool to prevent obstetric complications. Despite the knowledge of its merit to avoid negative outcomes for both mothers and babies only 34.4% of health care providers in hospitals made proper use of the partograph.

4.8 SUMMARY

This chapter 4 presented and discussed the data analysis and the findings according to each variable from the checklist tool. The results have shown that there are so many gaps in obstetrical care in this selected health facility. Documentation of patients' information in both ANC cards and patients' files is poorly managed. Chapter 5 will discuss the conclusions, limitations and recommendations of this study.

CHAPTER 5

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Chapter 4 presented the results of this study. In this chapter 5, conclusions and limitations are outlined and finally, recommendations will complete this chapter. The recommendations set forth might lead to adaptation of guidelines in the obstetric management in the selected hospital as well as in other district hospitals and health centres in Ethiopia.

The main objective of the study was to investigate the prevalence of obstructed labour among pregnant women as well as developing guidelines to deal with obstetrical challenges in Gimbie Zone, West-Wollega, Ethiopia.

The specific objectives were to:

- Assess the prevalence of obstructed labour in Gimbie Zone, West-Wollega, Ethiopia.
- Identify and describe the complications of obstructed labour in Gimbie Zone, West-Wollega, Ethiopia.
- Develop guidelines to improve the care of pregnant women for better outcomes for both mother and baby.

5.2 SOCIO-DEMOGRAPHIC PARAMETERS

This section will summarise the findings from chapter 4 of the socio-demographic characteristics namely age, marital and educational status. Conclusions and recommendations will be set forth based on the findings.

5.2.1 Age

The study findings show that the age was more consistently recorded as compared to other variables. In the age group of 15 to 19 years, maternal morbidity was recorded at 21.4% and for their babies the incidence of complications was 35.7%. For the older women the increased obstetrical risk is primarily related to their (high) parity.

Conclusion

It can be concluded that among the different age cohorts the incidences of both maternal and neonatal complications are highest for the group of mothers between 15 and 19 years. These obstetrical complications might be primarily due to cultural and socio-economic factors rather than just their chronological age (Kirchengast 2009:5; Yohannis 2013:5) since these factors will affect the woman's autonomy and decision making power.

Recommendation

- The health care workers of antenatal and delivery care should be especially alert when dealing with expectant mothers in the age category of 15–19 years. Since most obstetrical problems occur among these youngest women, this is where most progress and advancement can be achieved.

5.2.2 Marital status

Among all the variables the marital status was not recorded at all. Only for one (0.7%) case was it known.

Conclusion

Documentation on several variables, including marital status, was very poor. This leads to unnecessary loss of data and disables the health care system in its performance and evaluation of services. It is well known from literature that marital status is an enabling factor for antenatal clinic attendance and the utilisation of skilled delivery facilities. Single mothers might be subjected to discrimination and stigma and be more likely to let

pass or skip antenatal checks thereby increasing the likelihood of missed opportunities for prevention and intervention in case of pathology.

Recommendations

- There is a great need to strengthen the existing knowledge among the health care workers on the importance of including demographic variables in patients' records.
- Organise in-service trainings for the health care workers in this selected hospital to equip and enable them to perform better and achieve more for the mothers and babies.

5.2.3 Educational status

The findings showed that of the 143 cases included in this study, educational status was completely missing or unknown. This variable was not indicated in either antenatal cards or maternity records.

Conclusion

Despite the fact that the Ethiopian MOH has guidelines or protocols regarding documentation of various variables in the patients' records/cards, this was omitted by the health care workers. Poor documentation poses a serious problem to the quality of health service delivery for pregnant women. Overlooking such essential variables/data might deprive the health care workers of valuable information or knowledge on their clients' vulnerability or those at higher risk. Uneducated women tend to pay fewer visits to the ANC and therefore any attendance is a valid opportunity and must be utilised to provide all available care, preparation and information for both mother and baby. Additionally, with further education women are also more likely to deliver in a health facility, rather than at home.

Recommendations

- The Ethiopian government should consider reinforcing the Standard Operating Procedures for maternal health care delivery services with the emphasis on the importance of recording the demographic variables.
- The hospital should conduct regular refresher courses to enhance health care workers knowledge and skills in record keeping and convincing them of the importance thereof.

5.2.4 Residence and distance

The results showed that 59 cases (41.3%) included in the study lived within a radius of 9 km from the selected hospital, another 30 (21%) within a distance between 10 and 29 km. Seventeen cases (11.9%) and another 12 (8.4%) lived at distances of 30–59 km, and 60 km and beyond respectively.

Conclusion

For about one fifth (n=29; 20.3%) of the women the distance to the hospital is greater than 30 km, for 8.4% even in excess of 60 km. This will translate in long travelling times and risking delivering en route. According to Duffy (2007:123), a delay in seeking and reaching appropriate care relates directly to the issue of access. It incorporates factors such as distance from health facilities and transportation. Duffy (2007:123) further mentions that in Gimbie, communities have little knowledge of life-threatening pregnancy complications and, even when a complication is recognised, the costs of medical treatment may discourage attendance at health facilities. In addition, most members of the population live in villages located many kilometres from the selected health facility, with no road transport and muddy, mountainous terrain to be crossed. On many occasions, women are carried to hospital on improvised stretchers and the travelling/walking can take many hours. Many women prefer to remain in labour, at home, for 3 or 4 days before seeking medical care, resulting in a high rate of foetal death and ruptured uterus.

Recommendations

- The hospital in collaboration with communities should address transport issues for the handling of emergency cases.
- Consideration should be given to build maternity waiting homes. For the women in the latter two distance groups (30–59 km; 60 km and over) it might prove helpful to provide the antenatal shelter services (at/near the selected hospital) where the mothers could lodge from 36 weeks of gestational age till delivery time. This would be safer than risking travelling a long distance when labour has started while the woman is still at home.

5.3 OBSTETRIC VARIABLES

In this section the results of the analysis of the obstetric data of the women included in the study will be re-evaluated and these will form the basis for conclusions and recommendations. The variables covered were: parity, gestational age, antenatal clinic attendance, mode of previous delivery, outcome of delivery for the mothers, outcome of delivery for the babies and partograph usage.

5.3.1 Parity

The study findings show that over half (n=78; 54.5%) of the cases were nulliparous followed by para 1 with 24 cases (16.8%). Seventeen (11.9%) women were para 2, 5 (3.5%) were para 3, nine (6.3%) were para 4, 5 (3.5%) were para 5 or more and for another 5 cases (3.5%) the parity was not known.

Conclusions

Nulliparous women and their babies were found to be at higher risk for complications but conversely the grand-multiparous women were not found to be at higher risk for obstetrical complications. However, the number of grand multiparous cases was low and this might have interfered with statistical significance.

In most of the literature and also in the current study the high risk groups for obstetric complications are first of all the nulliparous women, who have never delivered yet and

are usually, but by no means always, younger. As discussed under section 5.2.1 young age can contribute to the probability of complications, and the nulli-parous state can add to that risk. The second group that is generally recognised for its higher probability for problems that might develop during pregnancy and especially delivery are the grand multiparous mothers. In the current study the vulnerability of the nulli-parous women was underlined; the grand-multiparous mothers were very few in numbers and therefore the findings might have been different from what is expected.

Recommendations

- It is crucial for the health care workers to comprehensively screen all antenatal mothers in order to detect the cases at higher risk. Special attention should be given to nulliparous women since they are statistically prone to have more complications.
- All health care workers involved in maternity care should be given an in-service training on either Basic Emergency Obstetric and neonatal Care (BEMOnC) or Comprehensive Emergency Obstetric and neonatal care (CEMOnC) as in the selected facility.

5.3.2 Gestational age

Unfortunately in the current study almost two-thirds (n=88; 61.5%) of all patient charts and antenatal cards did not have the GA recorded.

Conclusions

The gestational age (GA) of a pregnancy is one of the most important parameters to guide the obstetrician in the decision making concerning the delivery process. In fact, without knowledge of the GA several obstetrical dilemmas are virtually impossible to solve. The calculation and recording of the GA on the antenatal cards and in the maternity files was deficient to a great extent. The concurrent usage of the Ethiopian and the Gregorian calendars posed some additional challenges.

Recommendations

- The government of Ethiopia (MoH) should reinforce the importance of exact and meticulous recording of all requested health parameters.
- It is also recommended that the Ministry of Health should put an emphasis on the use of the Gregorian calendar since this is the calendar that is internationally recognised.
- All health care workers involved in maternity care must be equipped with the Gestational Age calculator discs.

5.3.3 Antenatal clinic attendance

With regard to antenatal attendance, the study findings show that 35.7% of the pregnant mothers included in the study attended ANC 4 times or more. The national average for the mothers who make 4 or more ANC visits in Ethiopia stands at 12%.

Conclusion

Antenatal care from a skilled/trained provider is important to monitor the pregnancy and reduce the morbidity and mortality risks for the mother and child during pregnancy and delivery. Although ANC attendance was above the national average level, it is still only just over one third of mothers that attends 4 times or more. According to the WHO guidelines, 4 ANC visits are considered as a convenient series to provide the mothers and their babies with all the essential care and information as well as preparation for the oncoming delivery. The monitoring that takes place during the ANC visits enables the midwives and nurses to identify high risk groups and high risk individuals that need special or additional monitoring and care. Hereby the antenatal care provides an invaluable instrument in the recognition and identification of mothers and babies that are at higher risk than average and these can be selected for early planning of the suitable delivery method. The anticipation of potential complications during the antenatal visits can help the health care system to avoid the potentially negative outcomes.

Recommendations

- Comprehensive health education to pregnant women attending ANC is needed, emphasising the importance of ANC and hospital-based deliveries by skilled attendants.
- Male involvement in ANC attendance should be promoted because this will assist the family in making informed choices and decisions with regard to safe delivery for the mother and the baby.
- Develop various Information, Education and Communication (IEC) materials regarding the importance of ANC and hospital-based deliveries and the dangers of prolonged labour.
- Public health education must put more emphasis on the early signs and symptoms of obstructed labour and stress the importance of the timely seeking of professional assistance.

5.3.4 Obstetric history and mode of previous delivery

Over half (n=77; 53.8%) of the women included in the study were in their first pregnancy and therefore did not have a previous delivery. For about a quarter (n=14; 21.2%) of the 66 women who did have a previous pregnancy and delivery it was not known or not recorded how the previous delivery had been carried out.

Conclusion

The findings further revealed that as with other variables also the documentation of the previous mode of delivery proved to be problematic. This is the most basic information to be obtained for any mother who presents herself at any ANC. Without this knowledge the health care worker misses an important and valuable tool of decision making and the obstetric history is simply incomplete without it. Therefore, exact and precise history taking for obstetric variables is insufficient and leads to incomplete files in the selected hospital.

Recommendations

- The hospital should take responsibility for implementing the measures and standard operating procedures for maternal health care.
- Supervision and monitoring of records should be done regularly on a monthly basis by the Matron and other mentors to identify the gaps in recording and reporting.
- Strengthen continuous training of health care workers on the importance of hospital data quality and management.

5.3.5 Outcome/complications of delivery for the mothers

The majority (n=114; 79.7%) of all cases included in the study did not record any serious complications. This means that about one fifth, (n=29; 20.3%) of women suffered adverse events.

Conclusions

There were two cases of maternal mortality in the study group which amounted to a case fatality rate of $2/143=1.4\%$. These fatalities were due to ruptured uterus and might have been prevented through proper antenatal monitoring and skilled delivery care. Obstetrical and surgical skills at the selected hospital are considered to be better as compared to the national average. Although the outcome for mothers with obstructed labour at the selected hospital was relatively favourable compared to results of other studies (Gessesew & Mesfin 2003:175, 178; Shimelis et al 2010:145, 149) the reported morbidity among the mothers and babies was substantial, with a preventable mortality of 1.4% for the mothers and 7.5% for the babies.

Recommendations

- All health care workers in maternity care should be trained in standardised observation and monitoring. This might improve the frequency of observations and help in the interpretation of complications.
- Ensure that there is access to functioning emergency obstetric care (EmOC), both basic and comprehensive.

- The hospital should introduce maternal mortality and morbidity audit meetings to be conducted regularly with minute documentation plans for correcting any errors. Progress on key indicators has to be displayed as graphs and charts for staff to review.

5.3.6 Outcome/complications for the babies

The study findings revealed that almost one quarter (24.0%) of the babies suffered serious complications during delivery and among those were 11 babies who died for a perinatal mortality of 7.5%.

Conclusion

Although the perinatal mortality was considerably lower than the national average still too many lives of babies are lost to preventable causes at the selected hospital. Most of the deaths were among the babies born to the youngest mothers, in the 15–19 years age group, 21.4% of their babies did not survive. In several other studies done in Ethiopia and elsewhere (Asheber 2002:17; Gessessew & Mesfin 2003: 178; Islam et al 2012:43,45; Omole-Ohonsi & Ashimi 2007:61; Shimelis et al 2010:149) this perinatal mortality might be reported substantially higher.

Recommendations

- Establish monthly perinatal mortality audits because these will enable the maternity staff and doctors at the selected hospital to improve performance and ameliorate the outcome for the babies.
- The pregnancies in the 15–19 age cohort must be especially strictly monitored to save both more women and babies. By the 36th week of the gestation a plan of delivery should be established for every mother, especially in the young age group.

5.3.7 Use of the partograph

The study findings showed that the partograph was used correctly in only 6 cases (4.2%) and in 97 cases (67.8%) it was entirely not used. Further analysis had shown that there was a significant correlation between partograph usage and the incidence of maternal as well as neonatal complications.

Conclusions

The use of the partograph is very undervalued and under-practiced in the selected hospital. This underutilisation of the partogram is associated with and adds to increased maternal and neonatal morbidity and mortality, which could have been prevented. A partograph is crucial in the maternity setting because it provides a visual display of recorded observations carried out on mother and foetus during labour. Globally, this visual aid is used as part of the Safe Motherhood Initiative for improving labour management and reducing maternal and foetal morbidity and mortality and to identify cases of abnormal labour which are the source of complications that lead to morbidity and mortality. Unfortunately, most parameters on the partograph are not monitored and most health care workers do not document their findings on the partograph after reviewing the progress of women in labour. Documentation is very crucial because it offers evidence of the kind of care that is being given and how the patient/client is responding.

Recommendations

- Train all health care workers involved in maternity care in skills of safe labour practices; use of and interpretation of the partogram.
- The hospital should reinforce the use of partograph, to make sure that it is used correctly in all patients in labour to prevent prolonged and obstructed labour which is a risk factor for maternal and perinatal complications. The re-introduction of the partograph in the selected hospital needs to be given first priority for all midwives, nurses and doctors. Refresher courses will lead to better adherence to the recording in the files and increase the earlier detection of cases of obstructed labour.

- On-site continuing professional development programmes on standard protocols and guidelines must be provided for health professionals involved in maternal and child care.
- Regular monthly monitoring and evaluation of performance in the maternity ward will allow for a realistic assessment of the quality of the services.

5.4 LIMITATIONS OF THE STUDY

Despite the fact that this study has produced significant findings, there were some limitations as outlined below:

- This study was retrospective, quantitative and hospital based. Since it was performed at only one selected site this might not have estimated accurately the actual prevalence of obstructed labour due to the limited number of pregnant women delivering in this hospital.
- Additionally, the study was limited to a small sample since the data were collected in only one site with a relatively low number of cases over a period of only 1 calendar year. The findings might not be representative and cannot be generalised for the general population.
- As the study design was retrospective, the issues of missing or not recorded variables in patients' files, ANC cards and operating theatre as well as other confounding factors might have caused some potential bias. The researcher has to depend on the availability and correctness of the medical files (Hess 2004:1172).
- No interviews were possible with either clients or health care workers thereby contributing to a lack of data. Individual in-depth interviews could have yielded richer data.

5.5 RECOMMENDATIONS REGARDING FURTHER STUDIES

- A prospective study with data collection at several health facilities in the region should be conducted because this might yield more relevant data.

- In-depth interviews with health care workers and clients can provide more insights in the mechanisms of delay and the causation of negative outcomes for mothers and babies.
- Qualitative research should be conducted with community members including Traditional Birth Attendants (TBAs) to solicit their knowledge, attitudes and practices regarding their views on pregnancy, labour and health seeking behaviour. Qualitative studies may generate information about issues on the three delay model, such as factors affecting utilisation of health service delivery points, sociocultural and economic factors, accessibility to health facilities, and perceived quality of care.
- The inclusion of the conceptual framework of the three delay model into the midwifery training in the nation will enable the introduction into health education of the concepts of the three delays that are at the root of much of the morbidity and mortality related to pregnancy and delivery.

5.6 FINAL CONCLUDING REMARKS

Proper care during pregnancy and delivery is important for the health of both the mother and the baby, and forms the essence of the fifth Millennium Development Goal (MDG). The government of Ethiopia has made tremendous efforts in reducing maternal and neonatal mortality. According to the WHO (2012:39), in Ethiopia the maternal mortality rate has declined from 950 per 100,000 live births in 1990 to 350/100,000 live births in 2010. Despite the progress made, there are still substantial challenges in the provision of maternal and child health services as revealed in the current study's results. The findings from this study demonstrate the lack of proper and accurate documentation. Both in the antenatal cards as well as the maternity files and in particular the partograph, many data and observations are simply not recorded. Many of the complications for the mothers and babies could be prevented by accurate documentation. This practice of proper recording must be re-enforced in the selected hospital to improve performance and to reduce morbidity and mortality. There continues to be room for improvement in the implementation of high quality maternal health services if the Ethiopian government is to meet the fifth Millennium Development Goal.

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ANNEXURE 1: ETHICAL CLEARANCE BY UNISA



**UNIVERSITY OF SOUTH AFRICA
Health Studies Higher Degrees Committee
College of Human Sciences
ETHICAL CLEARANCE CERTIFICATE**

HSHDC/113/2012

Date: 30/11/2012

Student No: 46347798

Project Title: **The Prevalence of Obstructed Labour among pregnant women at a selected hospital, West Wollega, Ethiopia.**

Researcher: **Johannes Pieter Kip**

Degree: Masters in Public Health

Code: DLMPH95

Supervisor: Dr M. Modiba

Qualification: PhD

Joint Supervisor: n/a

DECISION OF COMMITTEE

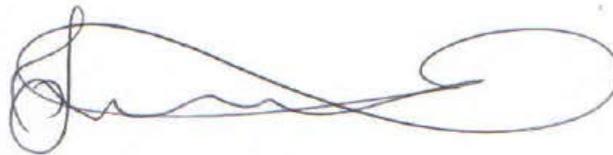
Approved

Conditionally Approved


Prof L Roets

CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

P.P



Dr MM Moleki

ACTING ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

ANNEXURE 2: PERMISSION LETTER FROM SELECTED HOSPITAL



HOSPITAALA ADVENTISTII GUYA A 7^{FFA} GIMBII GIMBIE 7TH DAY ADVENTIST HOSPITAL

Gimbie, Wollega

Ref G AH - 541-2012

Ethiopia

Date:

November 26, 2012

To: Dr. Johannes Pieter Kip
Gimbie Adventist Hospital

Re: Your request for permission to conduct research concerning obstructed labour

The management committee is pleased to inform you that permission is granted for you to perform the research concerning obstructed labour in West-Wollega.

We request that you will adhere to all internationally honored principles of confidentiality and integrity, as is also required by the Federal Ministry of Health.

The Committee is also looking forward to seeing the results of your study.

Sincerely,

Signature: 



Name/Function: Galeta Yadessa, Personnel Director, Chair Educational Committee

 gahahi@gmail.com

 228 Gimbie, Wollega

 0577710083

0577710051

0577711335

0577711330

0577711331

Administration

Operations Officer

Personnel Director

Outer Clinic

Medical Director

ANNEXURE 3: PERMISSION LETTER FROM OROMIO REGIONAL HEALTH BUREAU



BIIROO EEGUMSA FAYYAA
OROMIYAA

OROMIA HEALTH BUREAU
የኦሮሚያ ጤና ጥበቃ ቢሮ

Lakk/Ref. No. BES/0118/2005/17-8/2118

Guyyaa /Date 20/3/2005

Hoospitaala Gimbiitif

Gimbii

Dhimmi: Xalayaa deeggarsaa ilaala

Akkuma beekamu Biiron keenya ogeeyyii, dhaabbilee akkasumas namoota qorannoo gaggeessuuf piropoozaala dhiyeffatan piropoozaala isaanii madaaluun akkanumas iddoo biraatti ilaalchisaniif fudhatama argatee (approved) dhiyaateef, piropoozaala isaanii ilaaludhaan waraqaa deeggarsaa ni-kenna. Haaluma kanaan mata-duree "Assessment of the prevalence of obstructed labour and its complication among pregnant women at a selected hospital, West Wolega, Ethiopia" jedhurratti Dr "J. P Kip" Hoospitaala keessan keessatti hojjachuuf piropoozaalii isaanii Koree "Health Research Ethical Review Committee" Biiroo keenyaatti dhiyeffataniiru. Haaluma kanaan koreen Qu'annoo fi Qorannoo Biiroo keenyaa qorannoon kun akka hojjiirra oolu mirkaneesseera. Waan kana ta'eef hojii qorannoo kanarratti deeggarsa barbaachisaa ta'e akka gootaniif jechaa, Dr "J. P Kip" wayitii qorannoon kun qaaceffamee xumurame fiirisaa kooppii tokko Biiroo Eegumsa Fayyaa Oromiyaatiif akka galii godhu garagalchaa xalayaa kanaatiin isaan beeksifna.

Anis, Dr "J. P Kip" wayitii qorannoon kun qaaceffamee xumurame fiirisaa kooppii tokko Biiroo Eegumsa Fayyaa Oromiyaatiif akka galii godhu mallattoo kiyyaan mirkaneessa.

Nagaa wajjin

Mallattoo _____
Maqaa _____
Guyyaa 20/03/2005
Lakk. Bilbilaa 0923808459

G/G
Waajjira Eegumsa Fayyaa G/W/Lixaatiif
Dr "J. P Kip"
Gimbii



Tujumaa/Guutaa _____
AHIH/Balaa Tasaa Fayyaa Hawaasaa _____
Qu'annoo fi Qorannoo _____
I/G/ A Adeemsa xiqqaa Q/Qorannoo _____

Teessoo: Tel:+251-11-371-72-77, Fax: +251-11-371-72-27 P.O.Box.24341 E-mail: ohbhead@telecom.net.et
Address: ADDIS ABABA/FINFINNE-ETHIOPIA

ANNEXURE 4: RESEARCH TOOL

Data collection checklist from patients' files, antenatal cards, maternity records and operating room registers

SECTION A: Socio-demographic Characteristics

A.1. Exact age of the mother in years: _____, as well as in cohorts:

- 15-19
- 20 – 24
- 25 – 29
- 30 – 34
- 35 and above
- no data/missing

A.2. Marital status

- Single
- Married
- Separated
- Divorced
- Widowed
- no data/missing

A.3. Level of education attained

- None
- Primary
- Junior Certificate
- Cambridge School Certificate
- Tertiary (diploma/degree)
- no data/missing

A. 4. Residence/Kebele: _____

A. 5. Distance from home to health facility

- 0 - 4 km
- 5 - 9 km
- 10 – 14 km
- 15 - 19 km
- 20 or more km
- no data/missing

A.6. Distance to ANC

- 0 - 4 km
- 5 - 9 km
- 10 – 14 km
- 15 - 19 km
- 20 or more km
- no data/missing

SECTION B: Obstetric history and other variables

B.1 Parity of the mother

- 0
- 1
- 2
- 4
- 5 or more
- no data/missing

B.2. Gestational age in weeks: _____ (from antenatal card)

B.3. Number of ANC visits

- 0 visit
- 1 visit
- 2 visits
- 3 visits
- 4 or more visits
- no data/missing

B.4. Mode of delivery

- Normal Vaginal Delivery (NVD)
- Vacuum
- Forceps
- Caesarean Section (C/S)
- Destructive Operation
- Other (specify) _____
- no data/missing

B.5. Previous abnormal/difficult deliveries

- Specify _____
- no data/missing

B.6. Reason for procedure/intervention

- Foetal distress
- Obstructed labour
- Antepartum haemorrhage
- Amniotic infection
- Malpresentation
- Other (Specify)_____
- no data/missing

B.7. Apgar score for the baby

- 1 min ____
- 5 min ____
- 10 min ____
- no data/missing

B.8. Baby's weight in Kilograms:_____

- no data/missing

B.9. Maternal complications

- Sepsis
- Postpartum haemorrhage
- Ruptured uterus
- Fistula
- Death
- Other (specify)_____
- no data/missing

B.10. Foetal/neonatal complications

- Asphyxia
- Death
- Other (specify) _____
- no data/missing

B.11. Frequency of correct use of the partogram in the woman's chart

- None
- Partial
- Complete
- no data/missing

