AWARENESS OF DANGER SIGNS OF OBSTETRIC COMPLICATIONS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN EAST WOLLEGA, ETHIOPIA

by

ABERA WORKNEH WANBORU

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SUPERVISOR: DR EN MONAMA

CO-SUPERVISOR: TG LUMADI

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Student number: **43290078**

I declare that **AWARENESS OF DANGER SIGNS OF OBSTETRIC COMPLICATIONS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN EAST WOLLEGA, ETHIOPIA** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

DATE

Abera Workneh Wanboru 6 March 2013

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STUDENT NUMBER: 43290078
STUDENT: ABERA WORKNEH WANBORU
DEGREE: MASTER OF PUBLIC HEALTH
DEPARTMENT: HEALTH STUDIES, UNIVERSITY OF SOUTH AFRICA
SUPERVISOR: DR EN MONAMA
CO-SUPERVISOR: MRS TG LUMADI

ABSTRACT

A quantitative, descriptive and cross sectional study was conducted in four (4) health care facilities to determine whether pregnant women attending antenatal care are aware of danger signs of obstetric complications.

The objectives of the study were to assess awareness of danger signs of obstetric complications and to associate demographic and obstetric factors with awareness of danger signs of obstetric complications among pregnant women attending antenatal care in Eastern Wollega zone.

Data was collected by means of structured questionnaire from 384 pregnant women attending antenatal care in the 4 health facilities and analysed using the Statistical Package for Social Sciences (SPSS) 16 computer program.

The findings revealed that the proportion of women who were aware of danger signs of obstetric complications was inadequate.

Recommendations were made in line with the research findings.

Key concepts

Awareness; obstetric complication; danger signs of obstetric complications; pregnant women, antenatal care.

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There is a saying “It takes a whole village to raise a child”, and this study has shown that it needs support from the whole family and community to help women through their pregnancies for the safe arrival of a baby to raise. In some ways, this dissertation also took a community to see it through to fruition, there I wish to express my appreciation and thanks to the following:

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Dedication

I dedicate this dissertation to:

My wife, Likelash Kifle, for her understanding and support

Women of East Wollega who took part in this study

My supervisors, who worked hard to make this happen

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AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal care
BCC	Behaviour change communication
CI	Confidence interval
CNCD	Chronic non-communicable diseases
EDHS	Ethiopian demographic and health survey
ESHP	Essential health service packages
FMOH	Federal Ministry of Health of Ethiopia
HC	Health centre
HEP	Health extension program
HEW	Health extension workers
HF	Health facility
HIV	Human Immunodeficiency Virus
HSDP	Health sector development program
HSEP	Health service extension program
IEC	Information, education, and communication
MDG	Millennium development goals
MMR	Maternal mortality ratio
NIH	National Institute of Health
OR	Odds ratio
PNC	Postnatal care
PPROM	Preterm pre-labour rupture of membrane
PROM	Premature rupture of membrane
RHB	Regional Health Bureau
SPSS	Statistical Package for the Social Sciences
SSA	Sub-Saharan Africa
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNISA	University of South Africa
VCHW	Volunteer community health worker
WHO	World Health Organization

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CHAPTER 1

Orientation to the study

1.1 INTRODUCTION

Maternal mortality is a serious public health problem in Ethiopia and other sub-Saharan African countries. Women in Ethiopia die as a result of complications of pregnancy and childbirth. In 2006, the estimated lifetime risk of maternal deaths in Ethiopia was one in 22 live births (EDHS 2006:233). This is very high compared to Ireland's estimated one in 47, 600 (WHO, United Nations Children's Fund [UNICEF], United Nations Population Fund [UNPF] and the World Bank 2005:24).

The major causes of maternal deaths in Ethiopia are haemorrhage, puerperal sepsis, hypertensive disorder of pregnancies, obstructed labour, and unsafe abortion (Hika & Kalu [S.a.]:8; Berhane, Hailu & Enqueselassie 2006:117; Gaym 2000:217-221; Garomssa & Dwivedi 2008:2).

Antenatal care service is a service contact point which enables pregnant women to receive potentially lifesaving information on danger signs of obstetric complications for which assistance should be sought from a health care provider without delay. About 34% of Ethiopian women receive some form of antenatal care during their pregnancy but only one in five was informed of signs of pregnancy complications during an ANC visit (Ethiopia demographic and health survey [EDHS] 2012: 8).

1.2 BACKGROUND TO THE PROBLEM

Globally, approximately 358,000 women still die annually as a result of complications of pregnancy and childbirth. The main burden of these deaths is shouldered by two of the developing regions, sub-Saharan Africa and South Asia. These two regions together bear 87% of the global maternal deaths with 57% of the maternal deaths occurring in the sub-Saharan Africa region alone (WHO & UNICEF 2010:20). This global data translates to one woman dying every minute. For every woman who dies as a result of

pregnancy, some 30 women live but experience lasting morbidities as a result of obstetric complications (UNFPA 2003:5).

According to the WHO and UNICEF (2010:11-12), haemorrhage, sepsis and hypertensive disorders of pregnancy are among the top three causes of deaths in both South Asia and sub-Saharan Africa, where the majority of maternal deaths occur. At the same time as in developed countries, the most common cause of maternal death is complications related to interventions such as caesarean section and anaesthesia, reflecting global disparities in access to needed obstetrical care.

According to the 2007 population and housing census, Ethiopia had a population of 73,918,505 (FDRE 2008:8). The 2005 demographic and health survey reported 673 deaths per 100,000 live births (EDHS 2005:102). According to the 2010 demographic and health survey, the maternal mortality ratio for Ethiopia had risen to 676 deaths per 100,000 live births (EDHS 2012:8). This increase put Ethiopia among the top leading countries in maternal mortality rates.

1.3 STATEMENT OF THE PROBLEM

The researcher observed that pregnant women in East Wollega failed to reach health care facilities before severe forms of obstetric complications arose in which both mother and baby became at risk of dying from obstetric complications. This could be due to a lack of awareness of the danger signs of obstetric complications.

Awareness of the danger signs of obstetric complications is the essential first step in accepting appropriate and timely referral to obstetric care. Most maternal mortality and morbidity can be avoided through timely access to basic maternity care supported by adequate emergency obstetric care, for which early recognition of the problem at the family level is crucial. It is therefore of vital importance that pregnant women and their families are aware of the danger signs of obstetric complications to enable them to respond appropriately to complications that may arise. This is because an informed individual is better placed to make reasonable decisions.

An antenatal care services contact point should be the ideal opportunity to provide pregnant women with adequate information on obstetric complications, birth

preparedness, and a complication readiness plan. In a study in Tanzania, Pembe, Urassa, Carlstedt, Lindmark, Nyström & Darj (2009:3) found that 98.4% of the participants had attended antenatal care at least once. However, only 51.1% of these women mentioned at least one danger sign of obstetric complications. Mutiso, Qureshi and Kinuthia (2008:280) found that only 67% of participants attending antenatal care were aware of at least one danger sign of obstetric complications during pregnancy and only 6.9% mentioned three or more danger signs of obstetric complications. These findings indicated a very low awareness of danger signs of obstetric complications even among women who attended antenatal care where they are expected to get the required information on obstetric complications.

No study literature or findings could be found on research conducted in East Wollega on women's awareness of danger signs of obstetric complications. This motivated the researcher to assess the awareness of pregnant women in East Wollega, Ethiopia about the danger signs of obstetric complications.

1.4 PURPOSE OF THE STUDY

The purpose of the study was to assess the awareness of danger signs of obstetric complications among pregnant women attending antenatal care (ANC) services in the four health care facilities of East Wollega.

1.5 OBJECTIVES OF THE STUDY

In order to achieve the purpose, the objectives of the study were to

- determine the awareness of pregnant women attending antenatal care about danger signs of obstetric complications
- associate demographic and obstetric factors with awareness of danger signs of obstetric complications among pregnant women attending antenatal care
- make recommendations for educational programmes on danger signs of obstetric complications

1.6 SIGNIFICANCE OF THE STUDY

The information generated from the study should benefit both service providers and district health management teams in improving the quality of antenatal care (ANC) services, particularly the quality of information provided to pregnant women in the health care facilities. The findings should provide information to health care practitioners regarding the awareness of danger signs of obstetric complications among pregnant women in East Wollega. Finally, the findings should help and guide the development of focused behaviour change strategies for pregnant women.

1.7 RESEARCH DESIGN

A research design is an overall plan for obtaining answers to research questions (Polit & Beck 2008:66). Burns and Grove (2005:211) describe a research design as "a blueprint for conducting the study that maximises control over factors that could interfere with the validity of the finding".

In this study the researcher selected a quantitative, descriptive, cross-sectional study design. The researcher considered this the most suitable design to give a detailed description of the awareness of danger signs of obstetric complications among pregnant women attending antenatal care in the four health care facilities of East Wollega.

1.8 RESEARCH METHODOLOGY

Research methodology refers to the logical process followed during the application of scientific methods and techniques when a particular phenomenon is investigated (Polit & Beck 2008:765). The research methodology included the setting, population, sampling and sample, and data collection and analysis.

1.8.1 Setting

The study area is situated in East Wollega zone of the Oromia regional state, West Ethiopia. The zone has 17 rural and one urban *woredas*, two general hospitals and 35 functional health care centres, including one urban health care centre. A *woreda* is a district, the second lowest administrative unit, with an average population of 100 000.

The health care centres are expected to provide maternity care services along the continuum of care, including counselling on birth preparedness, complication readiness, and danger signs of obstetric complications, and to provide basic emergency obstetric care and refer complicated cases to the general hospitals. Figure 1.1 depicts the study setting.

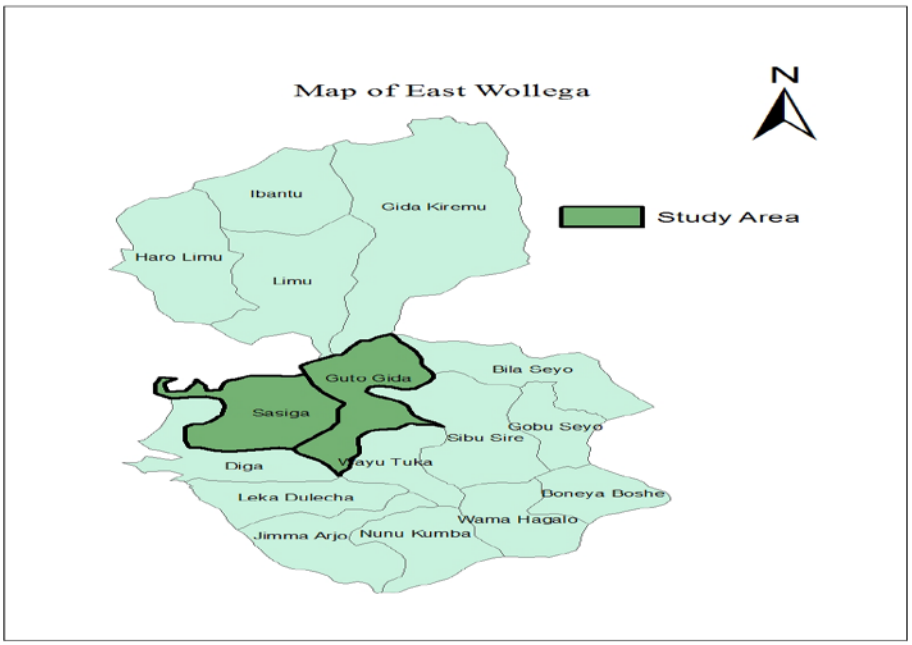

Figure 1.1 Map of East Wollega

(Source: John Snow Research and Training Institute 2012)

1.8.2 Population

A research population refers to all the elements, individuals, objects or substances that meet certain criteria for inclusion in a given universe (Burns & Grove 2007:42). The target population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying and to which the researcher wishes to generalise/transfer the research results (Polit & Beck 2008:67). The accessible population is the portion of the target population to which the researcher has reasonable access (Burns & Grove 2005:342).

In this study, the target population consisted of pregnant women who used the antenatal care (ANC) services of the health care facilities in East Wollega. The accessible

population was pregnant women who attended ANC services during the data-collection period in the four health care facilities in East Wollega, Ethiopia.

1.8.3 Sample and sampling

A sample is “a portion of the population considered for actual inclusion in a study” (De Vos, Strydom, Fouche & Delport 2005:193). Sampling is the process of selecting a portion or subset of the designated population to represent the entire population. The aim is to get a sample that is as representative as possible of the target population (LoBiondo-Wood & Haber 2010:224; Mouton 2002:110).

The researcher used non-probability convenience sampling to select the respondents from the accessible population of pregnant women attending antenatal care at the four health care facilities in East Wollega. In non-probability or purposive sampling, information-rich cases are selected for in-depth study of a phenomenon (Streubert & Carpenter 1999:79; Burns & Grove 2005:355). This sampling technique was considered appropriate for this study because the researcher did not have a sample frame as she did not know who would come to the health care facility for ANC services during the data-collection period.

The sample comprised 384 pregnant women above the age of 18 years who came for ANC services at Nekemte General Hospital, Nekemte Health Care Centre, Uka Health Care Centre, and Galo Health Care Centre in East Wollega, Ethiopia. This was a quantitative study therefore a large sample was required to minimise bias. The sample was proportionally divided among the three health care centres and the hospital, depending on the number of antenatal clients during March 2012.

1.8.4 Inclusion and exclusion criteria

In order to be included in the study, the participants had to be pregnant and attending antenatal care in the four respective health care facilities, irrespective of the number of follow-up visits they made. The participants also had to be willing to participate in the study.

Women who had emergency conditions, who were younger than 18, and who were deaf and/or mute were excluded.

1.8.5 Data collection

Data collection is “the precise, systematic gathering of information relevant to the research purpose or specific objectives, questions or hypothesis of a study” (Polit & Beck 2008:67, 367). Burns & Grove (2005:42; 2003:45) describe data collection as a precise, systematic gathering of information relevant to the research purpose or the specific objectives, questions or hypothesis of a study.

Data was collected by means of a structured questionnaire. The questionnaire was developed from the literature review of similar studies in other African countries and tools developed and used by JPHIEGO to study birth preparedness and complication readiness. The questionnaire was translated from English to Afan Oromo and then back to English, to ensure relevance and accuracy.

The questionnaire was pretested on ten participants attending ANC services at health care facilities not included in the main study. The questionnaire was modified on the basis of the feedback from the pilot study.

During data collection the questionnaire was administered by Afan Oromo-speaking female health care workers (field workers) who worked in the respective health facilities. The field workers were trained by the researcher beforehand on the questionnaire. Health personnel who provided ANC services were excluded from administering the questionnaire. The field workers asked the questions and completed the questionnaires on behalf of the respondents. Data was only collected from participants who were present and willing to participate in the study during the data-collection period. The data-collection process was monitored and checked for completeness in the field every day by the field workers and every week by the researcher.

1.8.6 Data analysis

Data analysis is the process of bringing order, structure and meaning to the mass of collected data (De Vos et al 2005:333). A statistician analysed the data, using the Statistical Package for Social Sciences (SPSS) Version 16 program. Categorical variables were tabulated using frequencies and percentages. In this study awareness of danger signs of obstetric complication was defined as the ability to mention at least one recognised danger sign during pregnancy, delivery or after delivery. The Chi-square test was used to determine the association between demographic and obstetric factors and awareness of danger signs of obstetric complication. The differences were regarded as significant when $p<0.05$.

Bivariate logistic regression analysis was used to identify factors associated with awareness of obstetric danger signs. Variables significant in the bivariate analysis were then entered into a multivariate logistic regression analysis. The associations between awareness and each independent variable were estimated by odds ratio (OR) and 95% confidence interval (CI). A CI was considered statistically significant when the interval between the upper and lower values did not include 1.

1.9 VALIDITY AND RELIABILITY

The quality of a research instrument is determined by its validity and reliability. Validity is the degree to which an instrument measures what it is supposed to measure (Parahoo 1997:269). Reliability is the degree of consistency or dependability with which the instrument measures the attribute it is designed to measure. If the instrument is reliable, the results will be the same each time the test is repeated (Polit & Beck 2003:308).

According to Parahoo (1997:269), the reliability and validity of a questionnaire can be greatly enhanced by careful preparation, and skilful construction of questions, paying particular attention to the needs and circumstances of potential respondents and anticipating their reaction.

The researcher conducted an extensive literature review and developed the questionnaire from previously used tools. The questionnaire was presented to the study

supervisors, experienced health care workers working in ANC services and the statistician for comment on content and suitability. This ensured validity. Reliability was ensured by developing the questionnaire from previously used tools.

1.10 SCOPE AND LIMITATIONS OF THE STUDY

The study was a public health care facility-based cross-sectional study limited to women attending ANC services in the four selected health care facilities of East Wollega, Ethiopia

The findings may therefore fail to reflect the situation of other areas of Ethiopia as there are differences in geographical features, intensity of health care promotion activities, health care coverage, and differences in local staff's skills and availability of different interventions. Women outside of the four health care facilities may also possibly generate different findings.

1.11 ETHICAL CONSIDERATIONS

Ethics deals with matters of right and wrong. *Collins English Dictionary* (1991:533) defines ethics as "a social, religious, or civil code of behaviour considered correct, esp. that of a particular group, profession, or individual".

In this study, the researcher obtained written permission to conduct the study, and respected the respondents' right to self-determination; privacy, anonymity and confidentiality; fair treatment, and protection from harm and discomfort. Chapter 3 discusses the ethical considerations in detail.

1.12 DEFINITION OF KEY TERMS

For the purpose of this study, the following key terms were used as defined below:

- **Awareness**: To be *aware* is to have knowledge of or be cognizant of something; *awareness* is the state or ability to perceive, feel, or be conscious of events, objects or sensory patterns (*Collins English Dictionary* 1991:106). In this study,

awareness meant the respondents' ability to be conscious of danger signs of obstetric complications.

- **Awareness of danger signs**: In this study, this referred to the respondents who were spontaneously able to state at least one danger sign of obstetric complications.

- **Obstetric complications**: *Obstetrics* is "the branch of medicine concerned with childbirth and the treatment of women before and after childbirth" and *obstetric* "adj. Of or relating to childbirth and obstetrics" (*Collins English Dictionary* 1991:1079). A *complication* is "a situation, event, or condition that complicates or frustrates; a disease or disorder arising as a consequence of another disease" (*Collins English Dictionary* 1991:330). In this study, obstetric complications refer to an undesired outcome of pregnancy, labour and childbirth, such as haemorrhage, hypertensive disorders of pregnancy (pre-eclampsia/eclampsia), obstructed labour, infection/sepsis, ectopic pregnancy, unsafe abortion, those due to complications of anaesthesia or caesarean section, anaemia, Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS), existing cardiac or renal disease, and others which could endanger the life of the mother or the foetus.

- **Danger signs of obstetric complications**: Danger signs of obstetric complications in this study refer to manifestations of obstetric complications that are easily identified by non-clinical personnel and necessitate skilled care during the pregnancy phases. These may be during pregnancy, labour and childbirth, and the postpartum period.

1.13 STUCTURE OF THE STUDY

Chapter 1 outlines the problem, purpose and significance of the study, the research design and methodology, data collection and analysis, and defines key terms.

Chapter 2 covers the literature review conducted for the study.

Chapter 3 describes the research design and methodology.

Chapter 4 discusses the data analysis and interpretation.

Chapter 5 presents the findings, and makes recommendations for practice, nursing education and further research.

1.14 CONCLUSION

This chapter outlined the background to; the purpose, objectives and significance of the study, and the research design and methodology. The key concepts defined and the ethical considerations briefly discussed.

Chapter 2 discusses the literature review undertaken for the study.

CHAPTER 2

Literature review

2.1 INTRODUCTION

A literature review is an organised presentation of what has been published on a topic by scholars (Burns & Grove 2005:93). It involves the scanning and critical reading of the selected literature to find out how it can be useful to the current research (Parahoo 1997:87). The purpose of a literature review is "to determine the extent to which the topic under study is covered in the existing body of knowledge" (Babbie & Mouton 2002:565).

The researcher conducted a literature review on maternal morbidity and mortality, and obstetric-related issues, including awareness of danger signs of obstetric complications. The focus was mainly on developing countries and sub-Saharan African regions.

2.2 MATERNAL MORBIDITY AND MORTALITY

Maternal morbidity and mortality are major public health concerns in most developing countries and in under-resourced settings (WHO 2010:1). The WHO (2010:1) estimates that every year approximately 8 million women endure pregnancy-related complications and about half a million die as a result. Most pregnant women hope to give birth safely to a baby that is alive and well and to see it grow up in good health. However, normal pregnancy may be accompanied by problems and complications which are potentially life threatening to the mother and/or the foetus.

Most maternal deaths occur in the poorest countries, especially in Africa and Asia while 1% of deaths occur in high-income countries. Maternal mortality is highest in sub-Saharan Africa, where the lifetime risk of maternal death is 1 in 16, compared with 1 in 2 800 in rich countries (WHO, UNICEF, UNFPA & World Bank 2005:11).

2.2.1 Causes of maternal death and morbidity

Causes of maternal deaths encompass events occurring from conception to 42 days postpartum. Within this period, women's health can be compromised by conditions that arise specifically from pregnancy, known as *direct obstetric conditions*, or that are aggravated or threatened by pregnancy, known as *indirect obstetric conditions.*

2.2.1.1 Direct obstetric causes of deaths

Direct obstetric deaths are deaths of women resulting from obstetric complications of pregnancy, delivery, and postpartum periods, from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above (WHO, UNICEF, UNFPA & World Bank 2005:4).

The direct causes of maternal deaths in developing and developed countries vary in quantitative terms even though qualitatively they appear the same. An analysis of the causes of maternal deaths in 2006 found that the leading causes of maternal deaths in Africa and Asia were haemorrhage, hypertensive disorders, sepsis/infections, obstructed labour and abortion (Khan, Wojdyla, Say, Gülmezoglu & Van Look 2006:1068). This indicated that most maternal deaths in less developed countries were due to direct obstetric causes whereas in developed countries, maternal deaths were due to indirect causes (Khan et al 2006:1068).

Regional estimates show that haemorrhage and hypertension are among the top three causes of deaths in both South Asia and sub-Saharan Africa, where the majority of maternal deaths occur. This is in contrast to developed countries, where other direct causes, for example, those related to complications of anaesthesia and caesarean sections are the leading cause of death, reflecting global disparities in access to needed obstetrical care (WHO & UNICEF 2010:11-12).

In Bangladesh, approximately 85% of maternal deaths result from direct obstetric causes (Koblinsky, Anwar, Mridha, Chowdhury & Botlero 2008:281). In rural Rajasthan, India, 58% of maternal deaths were due to direct obstetric causes, mainly postpartum haemorrhage and sepsis (Iyengar, Iyengar, Suhalka, & Dashora 2009:295-296).

In Egypt, 85.7% of maternal deaths are due to postpartum haemorrhage, hypertensive disorders of pregnancy, complication of caesarean section, sepsis and puerperal sepsis (El-Gharib, Rakha, Awara, Mahfouz & Elhawary 2010:80-81). In a hospital-based study in Nigeria, the main causes of maternal deaths (89.3%) were haemorrhage, sepsis, eclampsia, post-abortion complications, and obstructed labour (Olopade & Lawoyin 2008:268-269).

In Tanzania, Kazaura, Kidanto and Massawe (2006:24) found that the three leading registered direct causes of maternal deaths are eclampsia, postpartum haemorrhage, and sepsis and ruptured uterus.

Similar results were found in Ethiopia. Gaym (2000:217-221) revealed that most maternal deaths were due to ruptured uterus, unsafe abortion, puerperal sepsis, post-partum haemorrhage, eclampsia, antepartum haemorrhage, and ectopic pregnancy. Negussie and Mesfin (2009:10) reported that obstructed labour, puerperal sepsis, and abortion and its complications were the commonest causes of direct maternal deaths, followed by haemorrhage (ante- and postpartum haemorrhage), eclampsia and ectopic pregnancy. According to Hailu, Enqueselassie and Berhane (2009:116-117), the major causes of maternal deaths were haemorrhage, infection, pregnancy-induced hypertension, and obstructed labour.

2.2.1.2 Indirect obstetric causes of maternal deaths

Indirect obstetric deaths result from previously existing disease, or diseases that developed during pregnancy, and which were not due to direct obstetric causes but aggravated by physiological effects of pregnancy (WHO 2005:4). Globally, indirect causes, which include conditions such as malaria, HIV/AIDS and cardiac diseases, account for about one fifth of all maternal deaths (WHO, UNICEF, UNFPA & World Bank. 2010:11).

In developed countries, the leading indirect obstetric cause of maternal deaths in 2004 was embolism. In Africa, however, indirect causes accounted for only 4.6% of maternal deaths (WHO 2005:5-6). Recent estimates indicate that 18% of global maternal deaths resulted from indirect causes (WHO et al 2010:11).

In a study in Pakistan, Jabeen, Zalam, Ahmed and Bhatti (2010:681-682) found that 12.8% of maternal deaths were due to indirect causes, most commonly hepatic encephalopathy, cardiac diseases, and blood transfusion reactions.

A hospital-based study in Egypt also revealed that 14.3% of maternal deaths were due to indirect causes (El-Gharib et al 2010:80-81). In Nigeria, Olopade and Lawoyin (2008:269) found that anaemia was responsible for 6% out of 10.7% of maternal deaths from indirect obstetric causes. In their study, Mairiga and Saleh (2009:27) reported that anaemia contributed to 12.1% of maternal deaths.

In Ethiopia, Gaym (2000:217-221) found that only 5.1% of maternal deaths were due to causes not directly related to pregnancy. The causes were malaria, infectious hepatitis, cardiac disease, diabetes, intestinal obstruction, pneumonia, and pulmonary tuberculosis. In 2009, a hospital-based study in Jimma, Ethiopia, revealed that 2.3% of maternal deaths were due to cerebral malaria, which is one of the commonest indirect causes of maternal mortality (Negussie & Mesfin 2009:10-11).

2.3 DANGER SIGNS OF OBSTETRIC COMPLICATIONS

Severe nausea or vomiting; severe weakness or tiredness; spotting or bleeding from the vagina; shortness of breath; fever; high blood pressure; anaemia; swelling of face or hands are the major danger signs during pregnancy (Athayde, Maymon, Pacora & Romero 2000:233-279). Abdominal pain, prolonged labour, premature rupture of membranes, severe bleeding right after birth, and trouble with vision are danger signs during labour and childbirth (Moran, Sangli, Dineen, Rawlins, Yaméogo & Baya 2006:491).

Athayde et al (2000:233-279) state that labour which begins before the eighth month of pregnancy; fever; water breaking but labour not starting within 8-12 hours; strong contractions lasting for more than 12-24 hours; cord prolapse; cord wrapped tightly around the baby's neck; baby breech; placenta not coming out after one hour or only part of the placenta coming out; heavy bleeding; womb coming out with the placenta, and convulsions are danger signs during labour and childbirth.

According to Klein (1999:205-302), bleeding more than heavy monthly bleeding; fever; convulsions; offensive discharge or unusual colour; pain in the abdomen; painful, red, or swollen breasts, and red, hard and swollen legs are the most common danger signs after childbirth.

2.3.1 Haemorrhagic complication of pregnancy

According to Sorokin (2000:311-312), haemorrhage is ranked third among causes of direct maternal mortality in advanced gestation.

2.3.1.1 Third trimester vaginal bleeding (spotting or bleeding from the vagina)

Bleeding in late pregnancy is common and requires medical evaluation in 5-10% of pregnancies (Scearce & Uzelac 2007a:328). The seriousness and frequency of obstetric haemorrhage make third trimester haemorrhage one of the three leading causes of maternal deaths, and major causes of perinatal morbidity and mortality. The three major causes are premature separation of the placenta, placenta previa and uterine rupture. Elder (2002:144-146) describes antepartum haemorrhage as bleeding during pregnancy in which the causes can be placenta praevia, abruptio placentae, and vasa praevia. Furthermore, antepartum bleeding occurs in 3 to 5% of pregnancies beyond 22 weeks of gestation in which the bleeding can be minimal (spotting) or profuse which can be mainly caused by abruption placenta, placenta praevia and vasa praevia (Sorokin 2000:311-312).

2.3.1.1.1 Premature separation of the placenta (abdominal pain, vaginal bleeding)

Premature separation of the placenta is characterised by uterine pain and tenderness, usually of sudden onset (Elder 2002:144-46). Scearce and Uzelac (2007b:330-331) describe premature separation of the placenta as separation from the site of uterine implantation before delivery of the foetus occurring in 1 in 77-89 deliveries. It contributes to 30% of third trimester bleeding and approximately 80% of patients will present with vaginal bleeding.

2.3.1.1.2 Placenta praevia (sudden, profuse and painless vaginal bleeding)

According to Scearce and Uzelac (2007a:336), placenta previa is encountered in approximately 1 in 200 births where approximately 90% of the patients are porous and the incidence among the grand multiparas may be as high as 1 in 20. It is characterised by sudden, painless, and profuse haemorrhage usually after the 28th week of pregnancy.

2.3.1.1.3 Rupture of uterus (pelvic pain, vaginal bleeding)

According to Scearce and Uzelac (2007c:339), rupture of pregnant uterus is a potential obstetric catastrophe and a major cause of maternal death. Ruptures usually occur during labour and are characterised by increased supra pubic pain and tenderness associated with increased uterine irritability and vaginal bleeding.

2.3.1.2 Vaginal bleeding in labour (severe/profuse painless vaginal bleeding)

A small amount of bleeding associated with cervical dilatation is common in labour. According to Strehlow and Uzelac (2007:439), profuse painless vaginal bleeding during the course of labour may represent a previously undiagnosed placenta praevia which complicates approximately 0.5% of pregnancies. Bloody fluid at the time of rupture of membranes with associated abdominal pain, or uterine hyper tonicity indicates premature separation of placenta.

2.3.1.3 Postpartum haemorrhage (severe/heavy vaginal bleeding)

According to Sorokin (2000:317), postpartum haemorrhage (PPH), traditionally defined as blood loss of more than 500 ml after vaginal delivery, is caused by uterine atony, retained placental tissue, placental accreta or trauma to the genital tract. Elder (2002:201) describes PPH as a life-threatening obstetric emergency. This can be primary or secondary. Postpartum bleeding can be early, which occurs during the first 24 hours after delivery, and late, which occurs after first 24 hours but before 6 weeks of postpartum (Sorokin 2000:317). According to Elder (2002:201-203), primary PPH is an estimated genital blood loss of more than 500 ml within the first 24 hours after delivery

of the infant. It occurs in approximately 5% of all pregnancies. This can be characterised heavy bleeding, clots, clammy peripheries and tachycardia.

Elder (2002:203) adds that secondary PPH is an abnormal genital blood loss occurring at any time between 24 hours and 6 weeks after delivery. Fresh bleeding of any amount should not normally occur during this time. This is strongly linked to intrauterine infection, which in turn is usually but not always, triggered by retained placental tissue or membranes.

2.3.1.3.1 Retained placenta (the placenta or part of the placenta does not come out of womb after 30 minutes of baby's birth)

Elder (2000:203) describes retained placenta as abnormal adherence of the placenta to the uterine wall.

2.3.2 Hypertensive disorders of pregnancy (swollen hands/face, feet/ankles; trouble with blurred vision; severe headache and loss of consciousness)

According to Abramovici, Mattar and Sibi (2000:380), hypertension which is defined as a sustained blood pressure elevated to 140mmHg/90mmHg or an increase in 30 mm Hg/15 mm Hg from baseline second trimester values complicates 5-10% of pregnancies. Elder (2002:141) also reveals that pregnancy induced hypertension occurs in about 10% of all pregnancies.

Hypertensive disorders of pregnancy can be chronic hypertension, gestational hypertension, preeclampsia or eclampsia (Abramovici et al 2000:380). Miller (2007:321) states that preeclampsia complicates 5-7% of all pregnancies. Elder (2002:141) describes preeclampsia as hypertension, *obvious oedema of legs, hands and face* or sudden weight gain of two or more kilos within a week. Besides to these as the severity increases it includes *headache*, irritability and sometimes epigastric pain. Miller (2007:325) also includes sign of severe preeclampsia as cerebral or *visual disturbances* and others.

Abramovici et al (2000:282-286) also describe eclampsia as the development of convulsions, coma, or both, unrelated to other cerebral conditions during pregnancy or

postpartum periods in patients with signs and symptoms of preeclampsia. Elder (2002:142) adds that eclampsia occurs when a woman with severe preeclampsia starts to have convulsions. In eclampsia before convulsions, 83% of patients complain of headache while 49% present with *visual disturbance* (Abramovici et al 2000:286).

2.3.3 *Hyperemesis gravidarum* (severe nausea and vomiting)

Hyperemesis gravidarum is a term applied when the patient develops intractable vomiting ketosis, acetonuria, alteration of electrolyte imbalance and weight loss of 5% or more (Elder 2002:120). This condition may be associated with *hydatidiform mole*, multiple pregnancy and *hydramnios*. Guberman, Greenspoon and Goodwin (2007:385) describe *hyperemesis gravidarum* as persistent, otherwise unexplained vomiting in early pregnancy associated with ketonuria weight loss and affects 1-2% of pregnant women.

2.3.4 Premature rupture of the foetal membrane (PROM) (leaking of water from vagina)

Premature rupture of the foetal membrane or PROM refers to membrane rupture before the onset of labour (Athayde et al 2000:349). Roman and Pernoll (2007:279) point out that rupture of membranes may occur at any time during pregnancy, in which it becomes a problem if the foetus is *preterm*, or in the case of a term foetus, if the time between rupture of membrane and the onset of labour is prolonged (>24hours). According to Athayde et al (2000:349), the overall incidence of PROM is 10% and it is a risk factor for perinatal morbidity and mortality particularly when it occurs before 32 weeks. Preterm pre-labour rupture of membranes (PPROM) occurs in approximately 2% of all pregnancies, accounts for up to one third of preterm deliveries, and is characterised by a pool of fluid in the vagina (Bennett 2007:190). Premature rupture of membrane (PROM) can be characterised by break in bag of water and no sign of labour within 8 to 12 hours (Athayde et al 2000:349). Roman and Pernoll (2007:297) state that PROM can be characterised by a sudden gush of fluid from the vagina or watery vaginal discharge with reduced size of uterus, and increased prominence of foetus to palpation.

2.3.5 Preterm labour (regular contractions before 37 completed weeks of pregnancy)

Preterm labour refers to a baby born before 37 weeks' gestation (259 days from the first day of the last menstrual period) (Elder 2002:194). Bennett (2007:177) describes preterm birth as delivery of a baby before 37 completed weeks of pregnancy.

2.3.6 Intrauterine foetal death/demise (IUFD) (no or reduced foetal movements)

Intrauterine foetal death/demise (IUFD) is the death of a foetus (unborn baby) that occurs for no apparent reason in a normal, uncomplicated pregnancy. It happens in about 1% of pregnancies and is usually considered a foetal death when it occurs after the 20th week of pregnancy and/or the foetal weight is equal to or less than 500 grams (Moon Dragon's Realm [Sa]:1).

2.3.7 Infection (high fever, foul smelling vaginal discharge, lower abdominal pain, awareness of heart beat)

Infection during pregnancy and childbirth can be characterised by the presence of fever (feeling hot, hot to touch); a bad smell of the vagina; sore or tender belly; pain in the waist area; rapid pulse, and rapid heartbeat.

According to the WHO (2008:17), puerperal infection/sepsis is any bacterial infection of the genital tract which occurs after the birth of a baby. The symptoms and signs usually appear more than 24 hours after delivery unless the woman has had prolonged rupture of membranes or a prolonged labour without prophylactic antibiotics.

2.3.8 Anaemia (lack of blood, severe weakness, shortness of breath, awareness of heart beat)

Anaemia is a significant maternal problem during pregnancy and most commonly results from a nutritional deficiency in either iron or folic acid. Arnett and Greenspoon (2007:406) refer to the Centres for Disease Control definition of anaemia as "a haemoglobin concentration of less 11 g/dL (hematocrit of <33%) in the first or third trimester or a haemoglobin concentration of less than 10.5 g/dL (hematocrit <32%) in

the second trimester". Elder (2002:113) points out that nutritional iron deficiency anaemia is the most common haematological problem. It is found in between 20% and 30% of pregnancies, and is common in lower socio-economic groups, multiparity, and women whose nutrition is poor.

According to Arnett and Greenspoon (2007:406), iron deficiency anaemia is responsible for approximately 95% of the anaemia during pregnancy, reflecting the increased demands of the foetus for iron whereas folic acid deficiency anaemia is almost exclusively caused by folic acid deficiency. This is characterised by pallor, easy fatigability, headache, palpitations, tachycardia, and dyspnoea.

2.3.9 Prolonged or obstructed labour (birth delay)

Prolonged labour varies from >12 hours to >24 hours (Elder 2002:180).

2.3.10 Mal-presentations (wrong lie of the baby, baby's hand or feet coming first)

Elder (2002:190) describes mal-presentations as breech presentation, face and brow presentation, transverse lying with possibly the arm or shoulder presenting, and cord presentation. Kish and Collea (2007:342) state that breech presentation, which complicates 3-4% of all pregnancies, occurs when the foetal pelvis or lower extremities engage the maternal pelvic inlet.

2.3.11 Umbilical cord prolapse (cord coming before the baby)

Cord prolapse refers to the descent of the umbilical cord into the lower uterine segment (Kish & Collea 2007:355). Prolapse of the umbilical cord to a level at or below the presenting part exposes the cord to intermittent compression between the presenting part and the pelvic inlet, cervix or vaginal canal. This can be observed simply by visualising the cord protruding from the birth canal or by palpating loops of cord in the vaginal canal.

2.3.12 Uterine inversion (womb coming out of the vagina)

Elder (2002:204) states that uterine inversion is a rare condition where the fundus descends through the cervix.

2.3.13 Amniotic fluid embolus (shortness of breath, loss of consciousness)

Amniotic fluid embolus can occur when the fluid escapes from the sac into uterine veins, and causes an anaphylactic reaction in the pulmonary circulation resulting in shock and DIC, collapse and dyspnoea (Elder 2002:204).

2.4 CONCLUSION

This chapter discussed the literature review conducted on maternal morbidity and mortality, and obstetric-related issues, including awareness of danger signs of obstetric complications. The focus was mainly on developing countries and sub-Saharan African regions. During pregnancy, women's health can be compromised by direct (arising specifically from pregnancy) or indirect (aggravated by pregnancy) obstetric conditions.

Chapter 3 describes the research design and methodology.

CHAPTER 3

Research design and methodology

3.1 INTRODUCTION

This chapter discusses the research design and methodology of the study in detail, including the population, sample, data collection and analysis, and ethical considerations.

3.2 RESEARCH DESIGN

Burns and Grove (2005:211) describe a research design as “a blueprint for conducting the study that maximises control over factors that could interfere with the validity of the finding”. A research design is an overall plan for obtaining answers to research questions (Polit & Beck 2008:66; Parahoo 1997:142). The choice of study design determines how researchers sample the population, collect measurements and analyse the data (Burns & Grove 2005:211; Polit & Beck 2008:66). Hence, the purpose of the design is to achieve greater control and thus improve the validity of the study in examining the research problem (Burns & Grove 2005:231).

In this study, the researcher chose a quantitative descriptive cross-sectional design in order to assess the respondents’ awareness of danger signs of obstetric complications and associated factors.

3.2.1 Quantitative

Burns and Grove (2003:27) describe quantitative research as a formal, objective, rigorous, systematic process for generating information in which numerical data are used to obtain information about the world. It is used to describe new situations, events, or concepts in the world.

3.2.2 Descriptive

Descriptive studies are a way of discovering new meaning, describing what exists, determining the frequency with which something occurs, and categorising information and are usually conducted when little is known about a phenomenon (Burns & Grove 2005:26). Descriptive research describes “phenomena in real-life situations. Through descriptive research, concepts are described and relationships identified” (Burns & Grove 2005:26). According to Polit and Beck (2008:274), the purpose of descriptive studies is to observe, describe, and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for hypothesis generation or theory development. The outcome of descriptive research includes the description of concepts, identification of relationships, and development of hypotheses that provide a basis for future quantitative research (Burns & Grove 2003:27).

Parahoo (1997:143) states that from the descriptive data, patterns or trends may emerge and possible links between variables can be observed, but the emphasis is on the description of phenomena. Burns and Grove (2005:232) state further that descriptive study designs are designed to gain more information about characteristics within a particular field of study. Their purpose is to provide a picture of situations as they naturally happen.

In descriptive research, investigators often use structured observation, questionnaires, scales and physiological measurements to describe the phenomenon studied (Burns & Grove 2005:26). Therefore, the researcher considered this approach most suitable to give a detailed description of the respondents’ awareness of danger signs of obstetric complications.

3.2.3 Cross-sectional

Cross-sectional designs are used to examine groups of subjects in various stages of development simultaneously with the intent to describe changes in the phenomena across stages, assuming that the stages are of a process that will progress over time (Burns & Grove 2005:236). Parahoo (1997:159-160) states that in cross-sectional studies, data are collected from different groups of people who are at different stages in their experience of a phenomenon. Burns and Grove (2005:236) add that selecting

subjects at various points in the process provides important information about the totality of the process, even though the same subjects are not monitored through the entire process.

According to Kumar (2005:93), a cross-sectional design is best suited to studies aimed at finding out the prevalence of a phenomenon, situation, problem, attitude or issue by taking a cross-section of the population and useful in obtaining an overall 'picture' as it stands at the time of the study. In cross-sectional studies all the information is collected at the same time because subjects are only contacted once. In this type of study, although research is carried out on a limited number of individuals, the interpretation of results is usually extended widely (Altman 1991:99).

The stage of development selected for the study might be related to age, position in an educational system, growth pattern or stage of maturation or personal growth where subjects are then categorised by group and the selected variables are collected at a single point in time (Burns & Grove 2005:236). Parahoo (1997:159-160) states that a cross-sectional study has the advantage of being time saving, cost effective and easy to conduct.

3.3 RESEARCH METHODOLOGY

Research methodology refers to the logical process followed during the application of scientific methods and techniques when a particular phenomenon is investigated (Polit & Beck 2008:765). The research methodology included the population, sampling and sample, and data collection and analysis.

3.3.1 Population

A research population is all the elements, individuals, objects or substances that meet certain criteria for inclusion in a given universe (Burns & Grove 2007:42). A research population refers to the total number of units from which data can potentially be collected. These units may be individuals, events, organisations or artefacts (Parahoo 1997:218). The target population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying and to which the researcher wishes to generalise/transfer the research results (Polit & Beck

2008:67). The accessible or source population is the portion of the target population that conform to designated criteria and that are accessible as subjects for a study (Burns & Grove 2005:342; Polit & Beck 2008:337). Parahoo (1997:219) describes the target (study) population as a subset of the theoretical population. It is the population to be studied; that is, the population of interest from whom the data can potentially be collected and generalisations may be made.

In this study, the target population consisted of pregnant women who used the antenatal care (ANC) services of the health care facilities in East Wollega. The accessible population was pregnant women who attended ANC services during the data-collection period in the four selected health care facilities in East Wollega, Ethiopia.

3.3.2 Sampling

Sampling is a process of selecting subjects who are representative of the population being studied (Burns & Grove 2003:31-43; De Vos, Strydom, Fouche & Delport 2005:193). Hence it is the process of selecting a group of people, events, behaviours, or other elements with which to conduct a study. Alston and Bowles (2003:164) refer to sampling as a process of selecting a few (sample) from a bigger group (the sampling population) to become the basis for estimating or predicating the prevalence of an unknown piece of information, situation or outcome regarding the bigger group.

Polit and Beck (2008:339-42) describe sampling as the method of selecting (non-overlapping) units to be included in the sample. There are two types of sampling: probability and non-probability. Non-probability sampling is used when the number of elements in a population is either unknown or cannot be individually identified (Alston & Bowles 2003:178). In non-probability sampling, elements are selected by non-random methods and there is no way to estimate the probability that each element has of being included in a sample, and every element usually does not have a chance for inclusion (Polit & Beck 2008:340; Alston & Bowles 2003:88).

The researcher used non-probability convenience sampling to select the respondents from the accessible population of pregnant women attending antenatal care at the four health care facilities in East Wollega. This sampling technique was considered appropriate for this study because the researcher did not have a sample frame as she

did not know who would come to the health care facility for ANC services during the data-collection period (Streubert & Carpenter 1999:79; Burns & Grove 2005:355).

Daniel (2010:189) maintains that the question of how large a sample to take arises early in the planning of any survey or experiment. To take a larger sample than needed to achieve the desired result is wasteful of resources, whereas very small samples often lead to results that are of no practical use. In this study, the researcher used Daniel's (2010:193) formula to determine the sample size. The formula for determining sample size for a single population proportion (Daniel 2010:193) is:

- $n = \frac{z^2pq}{d^2}$, used to determine the sample size for this study
- *The parameter ρ*, the proportion of the population possessing the characteristic of interest, the proportion of pregnant women who are aware of danger signs of obstetric complication, which is unknown.

The researcher could not find a better estimate of the population parameter, ρ, from the available literature. The existing literature deals with community-based research and the subjects were not only pregnant women. Hence, the researcher had to use ρ=0.5 to solve for n, the total number of sample required, which yields a large enough sample for the desired reliability and interval width (Daniel 2010:189).

- The level of confidence was taken to be 95% which makes $z_{\alpha/2}$=1.96
- The precision level or desired margin of error was taken to be d=0.05. .

Therefore to solve for n:

$$n = \frac{(z)^2\rho(1-\rho)}{(d)^2} = \frac{(1.96)^2 0.5(1-0.5)}{(0.05)^2} = \frac{3.8416 \quad * 0.25}{(0.0025)} = 384.16$$

In this study accidental non-probability sampling was used to identify the respondents from the population of interest. Accidental sampling entails using the most conveniently available people as study participants (Polit & Beck 2008:341; Parahoo 1997:230). This method was chosen because it was relatively simple, practical, economical and quick,

and did not require an elaborate sampling frame which was not available (Parahoo 1997:230-231).

Some of the limitations in accidental sampling are that findings cannot be generalised to the total sampling population and the most accessible individuals might have characteristics that are unique to them and might not be truly representative of the sampling population (Alston & Bowles 2003:88).

3.3.3 Sample

A sample is “a portion of the population considered for actual inclusion in a study” (De Vos, Strydom, Fouche & Delport 2005:193). Sampling is the process of selecting a portion or subset of the designated population to represent the entire population. The aim is to get a sample that is as representative as possible of the target population (LoBiondo-Wood & Haber 2010:224; Mouton 2002:110). The sample selected for a particular study is used to find out something about that population (Burns & Grove 2005:40; Parahoo 1997:230; Bland 2000:28). In this study, an adequate sample was selected from pregnant women attending ANC in the four selected health care facilities.

In order to be included in the study, the participants had to be pregnant, 18 years and older and attending ANC in the four respective health care facilities, irrespective of the number of follow-up visits they made. The participants also had to be willing to participate in the study.

Women who had emergency conditions, who were younger than 18, and who were deaf and/or mute were excluded.

The sample comprised 384 pregnant women above the age of 18 years who came for ANC services at Nekemte General Hospital, Nekemte Health Care Centre, Uka Health Care Centre, and Sasiga Health Care Centre in East Wollega, Ethiopia. This was a quantitative study therefore a large sample was required to minimise bias. The sample was proportionally divided among the three health care centres and the hospital, depending on the number of antenatal clients during March 2011.

3.3.4 Data collection

Data collection is “the precise, systematic gathering of information relevant to the research purpose or specific objectives, questions or hypothesis of a study” (Polit & Beck 2008:67, 367). Burns and Grove (2003:45; 2005:42) describe data collection as a precise, systematic gathering of information relevant to the research purpose or the specific objectives, questions or hypothesis of a study. In quantitative research, data collection involves the generation of numerical data to achieve the research objectives and answer the questions.

The researcher adopted a structured approach to study the respondents’ awareness of danger signs of obstetric complications. Polit and Beck (2003:319) state that a good deal of information can be collected by questioning people, a method known as self-report. Self-report data can be gathered either orally in an interview or in writing in a written questionnaire (Polit & Beck 2003:340-349). A researcher collecting structured self-report data for a quantitative study mostly uses a formal, written instrument (Polit & Beck 2003:340-349). Accordingly, the researcher used a structured questionnaire for data collection.

3.3.4.1 Development of the questionnaire

Instrumentation is the application of specific rules to develop a measurement instrument with the purpose of producing trustworthy evidence that can be used in evaluating the outcomes of research (Burns & Grove 2005:368). Structured instruments consist of a set of questions in which the wording of the questions and, in most cases, response alternatives is predetermined (Polit & Beck 2003:349). When structured questionnaires are used, subjects are asked to answer the same questions, in the same order, and with the same set of response options (Stommel & Wills 2004:194). Burns and Grove (2005:41) state that data generated with an instrument are at the nominal, ordinal, interval, or ratio level of measurement, which determines the type of statistical analysis that can be performed on the data.

The researcher developed the questionnaire from the literature review of similar studies in African and other developing countries and tools developed and used to study birth

preparedness and complication readiness. The questionnaire was prepared in English and translated to Afan Oromo for the purpose of data collection (see annexure 6). To ensure relevance and accuracy, the questionnaire was translated back to English (see annexure 5).

3.3.4.2 Characteristics of the questionnaire

The questionnaire consisted of lists of questions together with possible response alternatives or options. For this reason, nominal scale measurement and closed questions were used.

3.3.4.2.1 Nominal scale measurement

Nominal scale measurement is a form of measurement that is used when data can be organised into categories of a defined property but the categories cannot be ordered (Burns & Grove 2005:368). A nominal scale consists of "naming" observations or classifying them into various mutually exclusive and collectively exhaustive categories (Daniel 1999:5-6). Kumar (2005:67) states that nominal scale measurements enable the classification of individuals, objects, or responses based on a shared property or characteristics which can be divided into a number of subgroups in such a way that each member of a subgroup has a common characteristic.

Kumar (2005:67) adds that a variable measured on nominal scale may have one or more subcategories depending on the extent of variation where categories differ in quality but not quantity. Categories must be established in such a way that each datum will fit into only one of the categories and all the data must fit into the established categories in which the categories must be unorderable, exclusive, and exhaustive (Burns & Grove 2005:372).

The sequences in which subgroups are listed makes no difference as there is no relationship among subgroups (Kumar 2005:67). When data are coded for entry into the computer, the categories are assigned numbers (Burns & Grove 2005:372). The numbers assigned to categories in nominal measurement are used only as labels and cannot be used for mathematical calculation.

3.3.4.2.2 Closed questions

Open-ended questions allow respondents to answer in their own words and elaborate. In closed questions, the possible answers are set out in the questionnaire and respondents or data collectors tick the options/alternatives that best describe the respondents' experience, understanding or answers (Kumar 2005:132).

Closed questions are easy to analyse, and help to ensure that the information needed by the researcher is obtained though with limitations, such as the information obtained may lack depth and variety; the possibility of researcher bias, that is, researcher may list only response patterns that interest the investigator or that come to the investigator's mind, and the data collector may tend to tick a category without thinking through the issues (Kumar 2005:125). To avoid such limitations, the researcher listed possible responses including "*Other*" and "*I do not know/remember*" options.

The questionnaire was divided into four sections:

- Section A: Respondents' demographic data, including place of residence, distance of residence from nearest health care facility, age, ethnicity, religion, educational level, occupation and marital status.
- Section B: Pregnancy and delivery history, including months of pregnancy or gestational age, number of pregnancy, age at first birth, place of most recent birth and family history of chronic medical conditions were included.
- Section C: Accessibility and availability of healthcare services, including number of ANC visits made, months respondents were booked for ANC and their perceptions of accessibility and availability of health care services.
- Section D: Respondents' awareness of danger signs and experience of obstetric complications.

The response options included a list of key danger signs of obstetric complications as a means to simplify the way to measure awareness during pregnancy, delivery and the postpartum.

3.3.4.3 Pre-test/pilot study

A pre-test or pilot study helps researchers to identify problems in the design of questions, sequencing of questions, or procedure for recording responses (Polit & Beck 2008:762). Pre-testing of the data-collection instrument was done on 10 pregnant women attending ANC services at health care facilities with similar characteristics but who were not included in the main study. After the pre-test the researcher changed or modified the questionnaire for clarity on the basis of the feedback.

3.3.4.4 Data-collection process

Burns and Grove (2005:430) define data collection as the process of selecting subjects and gathering data from these subjects. The actual steps of collecting the data are specific to each study and are dependent on the research design and data-collection instrument. In this study data was collected by means of a structured questionnaire.

The questionnaire was administered by pre-trained, Afan Oromo-speaking female health workers (field workers) working in the respective health care facilities, but who did not provide ANC services. The field workers completed the questionnaire on behalf of the respondents by asking the questions and ticking the respondents' answers. The data-collection process was monitored and checked for completeness in the field every day by the field workers and every week by the researcher.

Information on awareness of danger signs of obstetric complications was collected by asking the respondents to state some of the serious health problems that can occur during pregnancy, labour and childbirth and puerperium that can endanger the life of a pregnant woman. If a specific question was found to be irrelevant to a respondent, the field workers asked the next relevant question.

3.3.5 Data analysis

Data analysis is the process of bringing order, structure and meaning to the mass of collected data (De Vos et al 2005:333). The choice of analysis techniques implemented is determined primarily by the research objectives, questions or hypothesis; the research design, and the level of measurement achieved by the research instruments

(Burns & Grove 2005:43). Burns and Grove (2005:43) state that the analysis of data from quantitative research involves the use of descriptive and exploratory procedures to describe study variables and the sample, statistical techniques to test proposed relationships, techniques to make predications, and analysis techniques to examine causality.

A statistician analysed the data, using the Statistical Package for Social Sciences (SPSS) Version 16 program. Categorical variables were tabulated using frequencies and percentages. In this study awareness of danger signs of obstetric complication was defined as the ability to mention at least one recognised danger sign during pregnancy, delivery or after delivery. The association between socio-demographic factors and awareness of danger signs of obstetric complication was determined by using the Chi-square test and bivariate logistic regression analysis, including the calculation of crude odds ratios (ORs). The differences were regarded as significant when $p<0.05$.

Bivariate logistic regression analysis was used to identify factors associated with awareness of obstetric danger signs. Awareness was summarised by the proportion of respondents who were able to indicate at least one danger sign of obstetric complications during the pregnancy phases. All variables that were significantly associated with awareness of danger signs of obstetric complications in the bivariate analysis were included in a multivariate logistic regression analysis in order to determine their independent effects. The associations between awareness and each independent variable were estimated by odds ratio (OR) and 95% confidence interval (CI). A CI was considered statistically significant when the interval between the upper and lower values did not include one.

3.4 VALIDITY AND RELIABILITY

An ideal data-collection procedure is one that captures a construct in a way that is relevant, accurate, truthful, and sensitive (Polit & Beck 2008:449). This can be assessed by the validity and reliability of the instrument. The quality of a research instrument is determined by its validity and reliability. Validity is the degree to which an instrument measures what it is supposed to measure (Parahoo 1997:269). Reliability is the degree of consistency or dependability with which the instrument measures the attribute it is

designed to measure. If the instrument is reliable, the results will be the same each time the test is repeated (Polit & Beck 2003:308).

According to Parahoo (1997:269), the reliability and validity of the study questionnaire can be greatly enhanced by careful preparation, and skilful construction, paying particular attention to the needs and circumstances of potential respondents and anticipating how they would react. Reliability and validity provide a fair indication of whether the respondents understand the questions in the same way; the formulation of the questions is the most suitable for this population; the respondents understand the instructions and how relevant the questions are, as well as whether the length of the questionnaire and its structure are likely to affect the responses.

3.4.1 Reliability

An instrument's reliability is the consistency with which it measures the target attribute and can be equated with a measure's stability, consistency, or dependability (Polit & Beck 2008:452). This means the extent to which all the respondents understand each question in the same manner. To be reliable, each question in a questionnaire needs to be understood by all the respondent in the same manner and the responses need to be consistent (Parahoo 1997:265).

The reliability of the questionnaire depends largely on question wording and questionnaire structure. Parahoo (1997:266) cites Lydeard (1991) who stated that it is "difficult enough to obtain a relatively unbiased answer even from a willing, alert individual who has correctly understood the question, but the task becomes virtually impossible if hampered by poor question wording". Some of the threat to reliability comes from questions that are ambiguous, double-barrelled, leading, double negative and hypothetical.

The question order and length of the questionnaire can also affect responses. Lengthy and uninteresting questionnaires not only affect response rates, but can also lead respondents to take them lightly. The order of the questions, the way in which they are grouped and their sensitivity (or lack of it) can all affect responses (Parahoo 1997:266).

In this study, the researcher ensured reliability by:

- Discussing the questionnaire with the supervisors (who have wide experience in the use of reliable instruments) prior to the actual data collection.
- Pre-testing the questionnaire, to avoid words that were vague or would yield data that was not in-line with the research questions.
- Developing the questionnaire from previously used tools and relevant literature across Africa and other developing countries.
- Adequately monitoring data collection by checking for completeness and missing data with the field workers every day and by the researcher weekly.
- Giving each respondent a unique identification code that was used during data entry.
- Approaching the respondents, informing them of the purpose, method and significance of the study as well as the duration of the interview in their home language (Afan Oromo), and inviting them to participate. In addition, assuring them of confidentiality and that opting out would not compromise the care they would receive.

3.4.2 Validity

The quality of a research instrument is determined by its validity and reliability. Validity is the degree to which an instrument measures what it is supposed to measure (Parahoo 1997:269). Reliability is the degree of consistency or dependability with which the instrument measures the attribute it is designed to measure. If the instrument is reliable, the results will be the same each time the test is repeated (Polit & Beck 2003:308).

Polit and Beck (2008:457) refer to validity as the degree to which an instrument measures what it is supposed to measure. Parahoo (1997:264) states that the validity of a questionnaire is the extent to which it addresses the research questions, objectives or hypotheses set by the researcher. In this study, the questionnaire was designed to determine the respondents' awareness of danger signs of obstetric complications and the association of pregnant women's general characteristics and awareness of danger signs of obstetric complications among ANC women in health care facilities. All the

questions together should reflect fully the concept of ‘awareness of danger signs of obstetric complications.

In this study, the following procedures were followed to ensure validity:

- The researcher conducted an extensive literature review and developed the questionnaire from previously used tools. The questionnaire was formulated and cross-checked by the supervisors who have the expertise in the field of study and have experience in advising fellow researchers. The questionnaire was also presented to experienced health care workers working in ANC services and the statistician for comment on content and suitability.
- The questionnaire was pre-tested, reviewed and corrections made, where necessary, following feedback from the pre-test prior to the main study.
- A data entry template was designed with the SPSS version 16 program with the same structure as the questionnaire and data was entered accordingly. Data cleaning and editing commenced during data collection and continued through the process of data entry. Data entry started two weeks after the beginning of the data collection by collecting the questionnaires from the study area.
- Data analysis was done by computer, using the SPSS version 16 program and appropriate statistical formula.

Reliability was assured by developing the questionnaire from previously used tools.

3.5 ETHICAL CONSIDERATIONS

Ethics deals with matters of right and wrong. *Collins English Dictionary and Thesaurus* (1995:533) defines ethics as “a social, religious, or civil code of behaviour considered correct, esp. that of a particular group, profession, or individual”. Research that involves human beings as subjects should be conducted in an ethical manner to protect their rights. Polit and Beck (2008:167) emphasise that when people are used as study respondents, “care must be exercised in ensuring that the rights of the respondents are protected”. Accordingly, the researcher obtained permission to conduct the study, obtained informed consent from the respondents and respected their right to self-determination, privacy, anonymity and confidentiality, and fair treatment (Polit & Beck 2008:174).

3.5.1 Protecting the right of the institutions

The researcher obtained ethical clearance from the Department of Health Studies Higher Degrees Committee of the University of South Africa (UNISA) to conduct the study (see annexure 1). The researcher requested permission to carry out the study from the respective health care facilities (see annexure 2) and included the certificate of ethical clearance from UNISA and the research proposal.

3.5.2 Protecting the right of the respondents

The three primary ethical principles on which standards of ethical conduct in research are based are beneficence, respect for human dignity, and justice (Polit & Beck 2003:143). The principle of beneficence encompasses doing no harm; the principle of respect for human dignity deals with the right to self-determination and the right to full disclosure, and the principle of justice deals with respondents' right to fair treatment and their right to privacy (Polit & Beck 2003:143). The researcher assured the respondents of their right to self-determination; privacy, anonymity and confidentiality, and fair treatment.

The right to self-determination is based on the ethical principle of respect for persons and indicates that people are capable of controlling their own destiny and should be treated as autonomous agents who have the freedom to conduct their lives as they choose without external controls (Burns & Grove 2005:190). In this study, the respondents were allowed to act independently by giving their informed consent to participate in the study (see annexure 4). Prior to data collection and giving consent, a letter in the language they are conversant with was read to each respondent. The letter explained the purpose benefits and risks of the study; that participation was voluntary and that they were free to withdraw from the study at any time if they so wished (Polit & Beck 2003:176). Prior to giving informed consent, there was a time for questions to ensure that the respondents fully understood the explanations. The respondents were then asked to sign consent if they were willing to participate (see annexure 4).

The right to fair treatment is based on the ethical principle of justice, which holds that each person should be treated fairly and should receive what is due or owed (Burns & Grove 2005:198). Polit and Beck (2003:150) state that prospective participants who are

fully informed about the nature of the research and its potential risks and benefits are in a position to make rational decisions about participating in the study. In this study, the respondents were treated fairly by giving them information prior to participation and by giving them the option to withdraw from the study if they wanted without any negative consequences regarding entitlement to health care services.

The respondents' confidentiality, privacy and anonymity were guaranteed by assuring them that the data obtained will not be used in any way except by the researcher. Therefore no names were indicated on the questionnaire and a numerical code was used to ensure that no one is aware of the source of data. Data collection was held in a separate private room away from other clients. The researcher maintained privacy, confidentiality and anonymity during the completion of the questionnaire to prevent any psychological harm to the respondents.

3.5.3 Scientific integrity of the research

The researcher respected the scientific community by protecting its integrity of scientific knowledge. Plagiarism was avoided by acknowledging all sources and references used in the study as well as all the people and institutions who contributed to the study, and presenting the findings without falsification and/or fabrication of information. In addition, the researcher tried to maintain competency in the subject matter and methodologies of the study, as well as in other professional and societal issues that affect public health research and the public good. The researcher also ensured the ethical integrity of the research process by the use of appropriate checks and balances throughout the conduct, dissemination, and implementation of the study.

3.6 CONCLUSION

This chapter described the research design and methodology in detail, including the population, sampling and sample, data collection and analysis, validly and reliability, and ethical considerations.

Chapter 4 covers the data analysis and interpretation, and the results.

CHAPTER 4

Data analysis and interpretation

4.1 INTRODUCTION

This chapter discusses the data analysis and interpretation and the findings. The researcher conducted a quantitative, descriptive cross-sectional study to investigate the respondents' awareness of danger signs of obstetric complications.

The findings were utilised to formulate recommendations to optimise activities that will raise awareness of danger signs of obstetric complications among pregnant women.

4.2 DATA COLLECTION AND ANALYSIS

Data collection took place between 6 March 2012 and 5 April 5 2012 in the four selected health care facilities. A sample of 384 respondents participated in the study using a structured questionnaire as data-collection tool. The data was collected by pre-trained, Afan Oromo-speaking female health workers (field workers) working in the respective health care facilities, but who did not provide ANC services.

Data were cleaned, entered into a computer and analysed using the SPSS version 16 statistical software. Categorical variables were tabulated using frequencies and percentages. In this study awareness of danger signs of obstetric complications was defined as the ability to mention at least one recognised danger sign during pregnancy, delivery or after delivery. The association between socio-demographic factors and awareness of danger signs of obstetric complication was determined by using the Chi-square test and bivariate logistic regression analysis, including the calculation of crude odds ratios (ORs). The differences were regarded as significant when $p<0.05$.

In section C of the questionnaire, the respondents indicated the accessibility and availability of health care services using a 5-point Likert scale. The following key was used to guide the respondents to complete this section:

5 – Strongly agree (SA)

4 – Agree (A)

3 – Undecided (U)

2 – Disagree (D)

1 – Strongly disagree (SD)

For the discussion of section C, the categories “strongly agree” and “agree” and the categories “disagree” and “strongly disagree” were grouped together

4.3 RESEARCH RESULTS

The data presentation was discussed according to sections of the questionnaire as indicated in table 4.1.

Table 4.1 Sections of the questionnaire

Sections	Function covered
Section A	Respondents’ demographic data
Section B	Respondents’ pregnancy and delivery history
Section C	Accessibility and availability of health care services
Section D	Respondents’ awareness of danger signs and experience of obstetric complications

Tables and figures are used in the data presentation. The presented percentages were rounded off to two decimal points. The results of the statistical tests were discussed with reference to the sample characteristics of the respondents which were used as factors associated with danger signs of obstetric complications. References are only made to the frequencies of responses that showed significant variations.

4.3.1 Section A: Respondents’ demographic data

The respondents’ demographic data covered place of residence, distance of residence from nearest health care facility, age, ethnicity, religion, education, occupation and marital status.

4.3.1.1 Respondents' place of residence

Of the respondents, 62.50% (n=240) were urban dwellers and 37.50% (n=144) were rural residents (see figure 4.1).

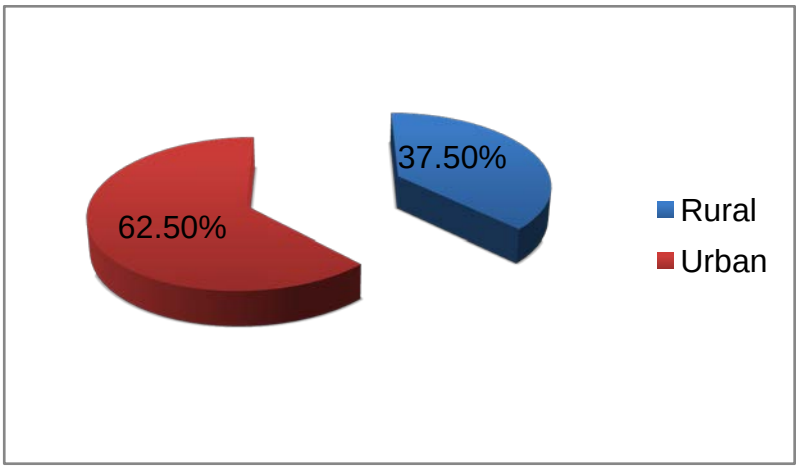

Figure 4.1 Respondents' place of residence (N=384)

4.3.1.2 Distance of respondents' residence from health care facilities

Of the respondents, 75.52% (n=290) were within two hours' walking distance from the nearest health care centre; 12.24% (n=47) lived beyond two hours' walking distance, and 12.24% (n=47) did not know the distance (see table 4.2).

Table 4.2 Distance of respondents' residence from the nearest health care facilities (N=384)

Distance from nearest HCF in walking hours	Frequency (n)	Percent	Valid percent	Cumulative percent
-2 hours	290	75.52	75.52	75.52
+2 hours	47	12.24	12.24	87.76
Don't know	47	12.24	12.24	100.00

4.3.1.3 Respondents' age

Of the respondents, 46.88% (n=180) were between 18 and 24 years old; 31.25% (n=120) were 25-29 years old; 17.45% (n=67) were 30-34 years old, and 4.43% (n=17) were 35 and older (see figure 4.2).

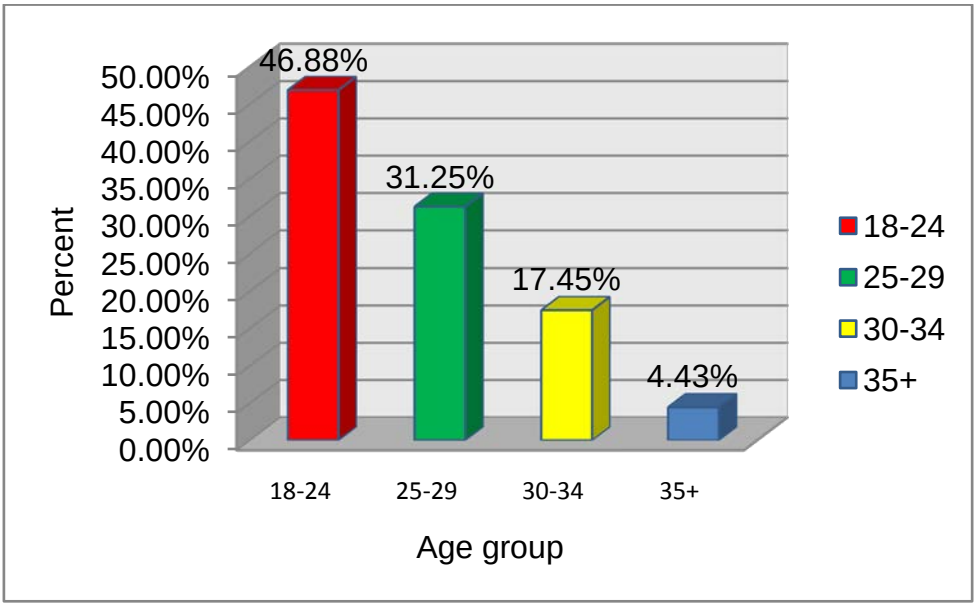

Figure 4.2 Respondents' age (N=384)

4.3.1.4 Respondents' ethnic group

Of the respondents, 83.07% (n=319) were Oromo; 9.38% (n=36) were Amhara; 4.95% (n=19) were Gurage, and 2.6% (n=10) were Tigre (see table 4.3).

Table 4.3 Respondents' ethnic composition (N=384)

Ethnic group	Frequency (n)	Percent	Valid percent	Cumulative percent
Oromo	319	83.07	83.07	83.07
Amhara	36	9.38	9.38	92.45
Gurage	19	4.95	4.95	97.40
Tigre	10	2.60	2.60	100.00

4.3.1.5 Respondents' religious affiliation

Of the respondents, 52.60% (n=202) were Christian Protestant; 36.46% (n=140) were Christian Orthodox; 8.85% (n=34) were Muslim; 1.04% (n=4) were Christian Catholic, and 1.04% (n=4) were Traditional Religion followers (see figure 4.3).

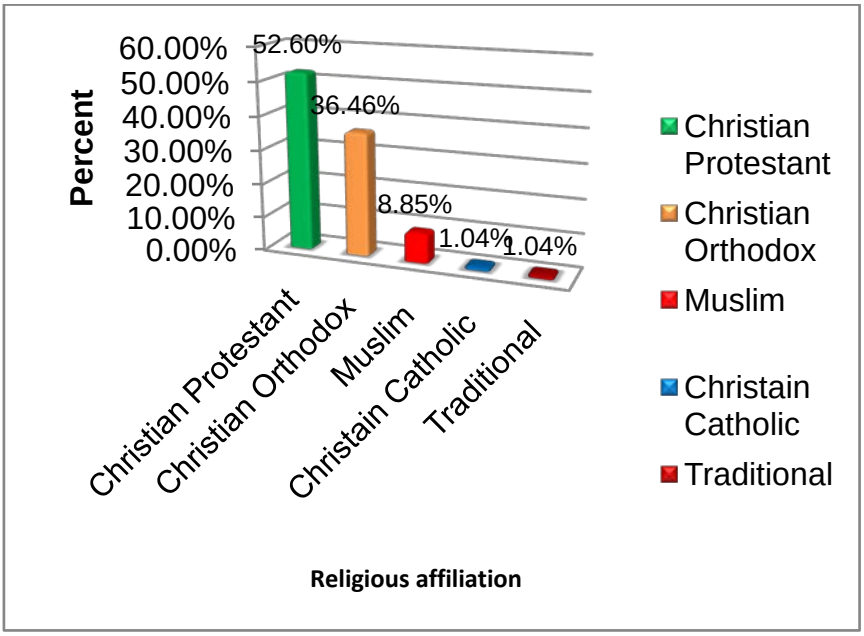

Figure 4.3 Respondents' religious affiliation (N=384)

4.3.1.6 Respondents' educational level

Of the respondents, 32.55% (n=125) had no schooling; 34.38% (n=132) had completed Grade 1-8; 19.01% (n=73) had completed Grade 9-12, and only 14.06% (n=54) had completed beyond Grade 12 (see table 4.4).

Table 4.4 Respondents' level of education (N=384)

Highest level of education attained	Frequency (n)	Percent	Valid percent	Cumulative percent
No schooling	125	32.55	32.55	32.55
Grade 1-8	132	34.38	34.38	66.93
Grade 9-12	73	19.01	19.01	85.94
Grade 12+	54	14.06	14.06	100.00

4.3.1.7 Respondents' occupation

Of the respondents, 50.26% (n=193) were housewives; 12.24% (n=47) were government employees; 22.14% (n=85) were farmers; 7.81% (n=30) were traders; 4.43% (n=17) were private employees, and 3.13% (n=12) indicated 'Other' (see figure 4.4).

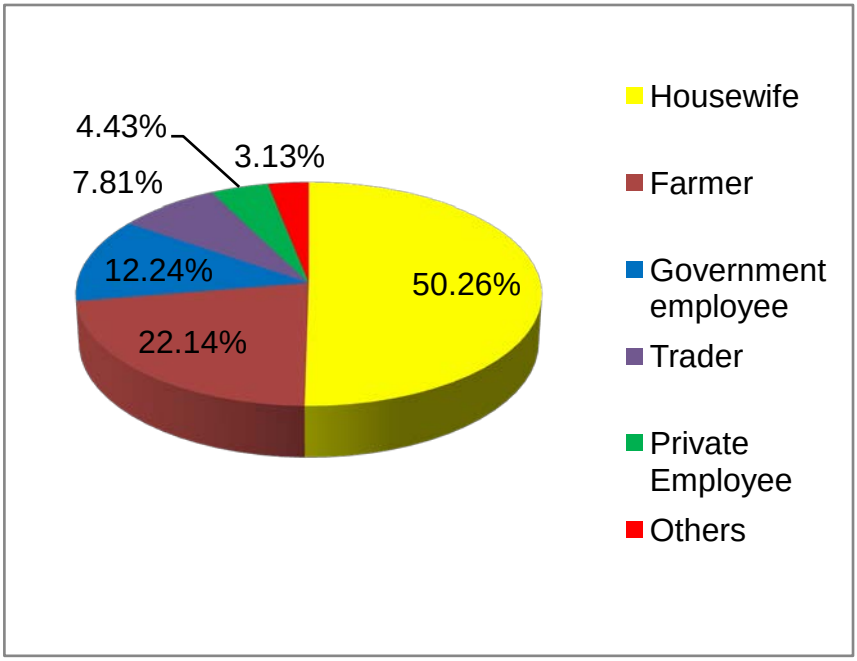

Figure 4.4 Respondents' occupation (N=384)

4.3.1.8 Respondents' marital status

With regard to marital status, 89.32% (n=343) of the respondents were married; 7.03% (n=27) were separated, divorced or widowed, and 3.65% (n=14) were single (see figure 4.5).

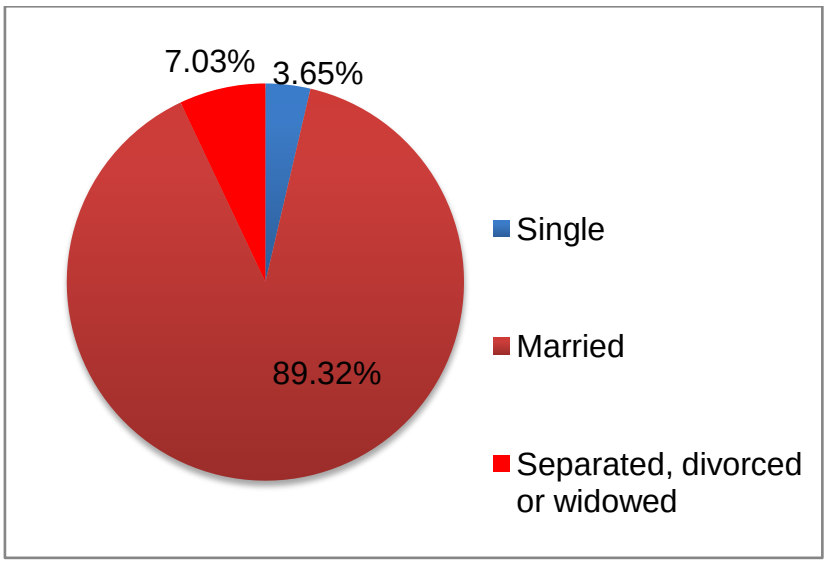

Figure 4.5 Respondents' marital status (N=384)

4.3.2 Section B: Respondents' pregnancy and delivery history

This section dealt with the respondents' pregnancy and delivery history, including months of pregnancy, number of pregnancy, age at first birth, place of most recent birth and family history of chronic medical diseases.

4.3.2.1 Respondents' months of pregnancy

With regard to their gestational age at data collection, 5.21% (n=20) of the respondents were in their first 3 months of pregnancy; 42.97% (n=165) were at 4 to 6 months; 37.76% (n=145) were at 7 to 8 months, and 14.06% (n=54) were in the 9th month (see figure 4.6).

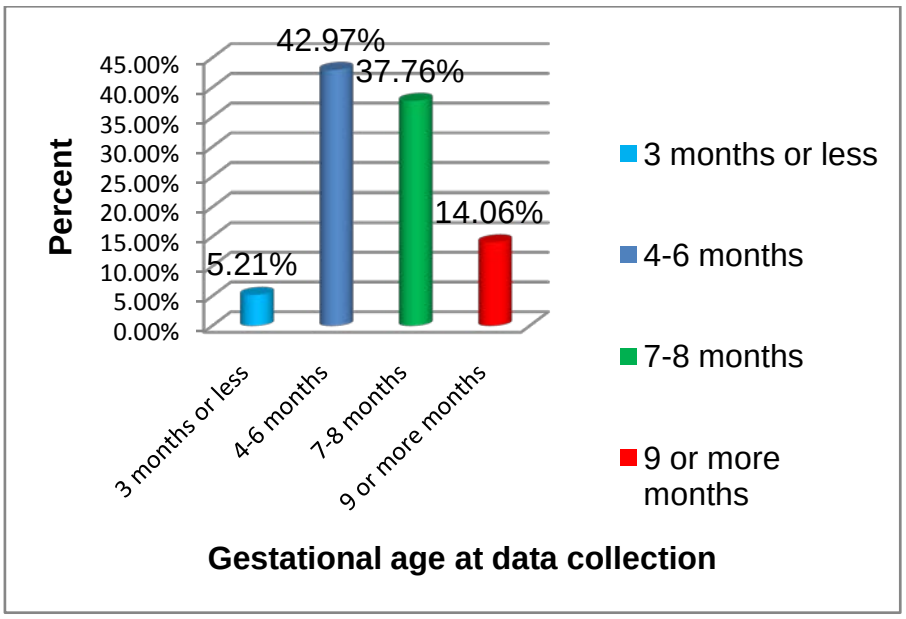

Figure 4.6 Respondents' months of pregnancy at data collection (N=384)

4.3.2.2 Respondents' number of pregnancy

Of the respondents, 38.02% (n=146) were pregnant for the first time; 59.37% (n=228) were in their 2nd to 5th pregnancy, and 2.60% (n=10) were in their 6th or more pregnancy (including the current one) (see figure 4.7).

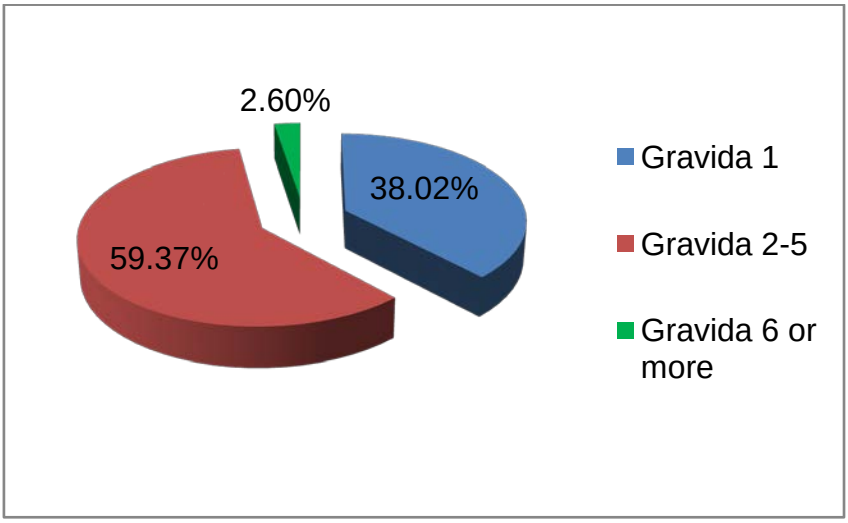

Figure 4.7 Respondents' number of pregnancy (N=384)

4.3.2.3 Respondents' age at first birth

Of the respondents, 49.22 % (n=186) gave birth for the first time before the age of 20 years; 12.76% (n=49) gave birth at 21 years or older, and 38.02% (n=146) were primigravidas (see table 4.5).

Table 4.5 Respondents' age at first birth (N=384)

Age at first birth	Frequency (n)	Percent	Valid percent	Cumulative percent
-15	13	3.38	3.39	3.39
16-20	176	45.83	45.83	49.22
21+	49	12.76	12.76	61.98
Primigravida	146	38.02	38.02	100.00

4.3.2.4 Respondents' place of most recent birth

Of the respondents, 33.33% (n=126) gave their most recent birth at home with the assistance of family or traditional birth attendants. This figure was increased to 54.00% (n=126) when only those who had a history of childbirth were considered. Moreover, 2.28% (n=11) gave birth at home with the assistance of HEWs. Only 25.26% (n=97) gave their most recent birth in health care facilities (see figure 4.8).

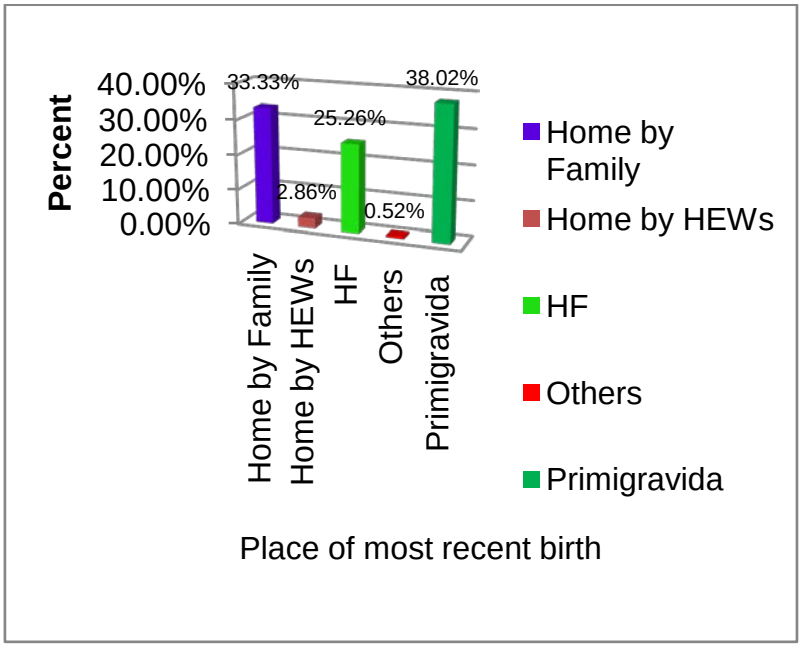

Figure 4.8 Respondents' place of most recent birth (N=384)

4.3.2.5 Respondents' family history of chronic medical diseases

Of the respondents, 72.92% (n=280) had no family history of chronic medical diseases, such as diabetes mellitus, cardiac diseases, hypertension, asthma and others, and 27.08% (n=104) had a family history of chronic medical diseases (see figure 4.9).

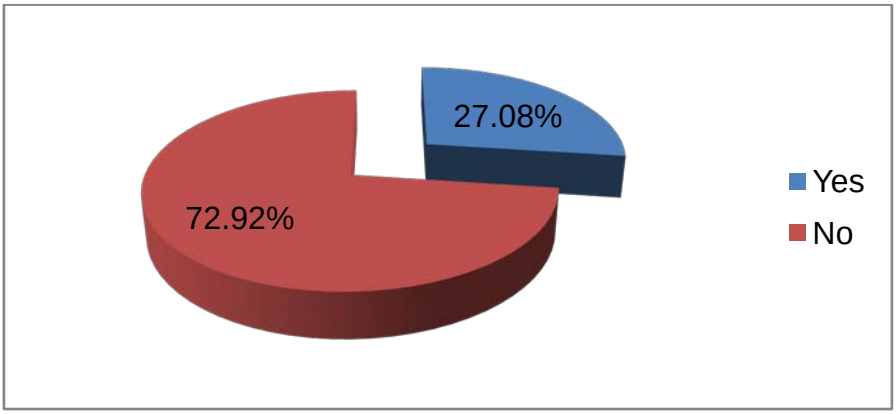

Figure 4.9 Respondents' family history of chronic medical diseases (N=384)

4.3.3 Section C: Accessibility and availability of health care services, and respondents' perceptions of accessibility and availability of health care services

This section incorporated months respondents were booked for ANC, number of antenatal care visits, and perceptions of accessibility and availability of health care services.

4.3.3.1 Respondents' number of antenatal care visit

Of the respondents, 39.32% (n=150) had attended ANC only once during their current pregnancy; 35.66% (n=137) had attended two visits; 16.67% (n=64) had attended three visits, while only 8.33% (n=32) had attended four or more visits (see figure 4.10).

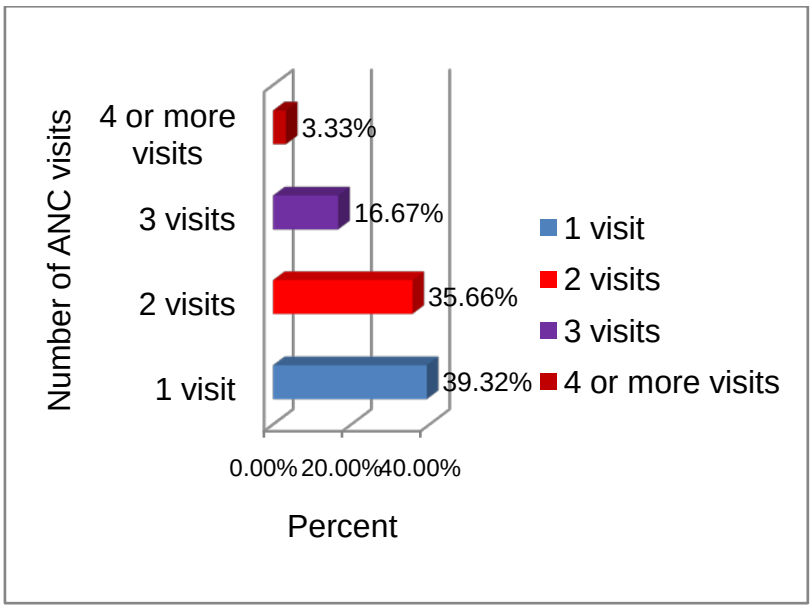

Figure 4.10 Respondents' number of ANC visits (N=384)

4.3.3.2 Respondents' months booked for ANC

Of the respondents, 41.41% (n=159) had their first ANC visit in the first 4 months of pregnancy; 42.97% (n=165) booked between 5 and 6 months of pregnancy; 12.76% (n=49) booked between month 7 and 8, and 2.86% (n=11) only booked at 9 months and beyond (see table 4.6).

Table 4.6 Respondents' months booked for antenatal care (N=384)

Month booked for ANC	Frequency (n)	Percent	Valid percent	Cumulative percent
-4	159	41.41	41.41	41.41
5-6	165	42.97	42.97	84.38
7-8	49	12.76	12.76	97.14
9 +	11	2.86	2.86	100.00

4.3.3.3 Accessibility and availability of health care services

Accessibility and availability of health care services included the respondents' ability to access next level of care when needed, waiting time during ANC visit to get services, HEWs home visit during pregnancy, TBA and VCHW availability at health care facility during ANC visit, TBA and VCHW home visit during pregnancy, and shortage of health care workers (see table 4.7).

The respondents' answers ranged from "agree" and "undecided" to "disagree". Regarding ability to access next level of care, 83.07% (n=319) agreed; 6.25% (n=24) were undecided, and 10.68% (n=41) disagreed. Regarding waiting time during ANC visit, 76.30% (n=293) agreed that they do wait too long to receive ANC during their visit; 6.20% (n=24) were undecided, and 17.45% (n=67) disagreed against that statement. Of the respondents, 58.33% (n=224) agreed, 21.09% (n=81) were undecided, and 20.57% (n=79) disagreed that there was always a shortage of health care workers.

Regarding TBA and VCHW availability at the health care facility to attend to pregnant women during their first visit, of the respondents, 9.38% (n=36) agreed; 9.64% (n=37) were undecided, and 80.99% (n=311) disagreed.

Regarding home visits and health talk by HEW, 37.50% (n=144) agreed, 6.25% (n=24) were undecided, and 56.25% (n=216) disagreed.

Regarding TBA and VCHW visiting the home during their recent pregnancy to talk about pregnancy and childbirth-related issues, 12.50% (n=48) agreed, 7.55% (n=29) were undecided, and 79.95% (n=307) disagreed.

Table 4.7 Accessibility and availability of health care services (N=384)

Aspects	Agree	Undecided	Disagree
Accessibility to next level of health care	83.07% (n=319)	6.25% (n=24)	10.68% (n=41)
Waiting time to receive ante-natal care during my visit	76.30% (n=293)	6.25%) (n=24)	17.45% (n=67)
Shortage of health care workers	58.33% (n=224)	21.09 % (n=81)	20.57% (n=79)
TBA and VCHW available at the health facility during first visit	9.38% (n=36)	9.64% (n=37)	80.99% (n=311)
HEW visit and talk about child birth related issues	37.50% (n=144)	6.25% (n=24)	56.25% (n=216)
TBA and VCHW visiting home and give health talk about pregnancy and childbirth-related issues	12.50% (n=48)	7.55% (n=29)	79.95% (n=307)

4.3.4 Section D: Respondents' awareness of danger signs and experience of obstetric complications

This section assessed the respondents' ability to recall danger signs of obstetric complications during their current pregnancy, previous pregnancy, delivery and postpartum.

4.3.4.1 Respondents' awareness of danger signs of obstetric complications

Regarding awareness of danger signs of obstetric complications, 73.96% (n=284) of the respondents spontaneously indicated at least one danger sign of obstetric complications that can occur during the pregnancy phases (pregnancy, childbirth or after delivery) (see figure 4.11).

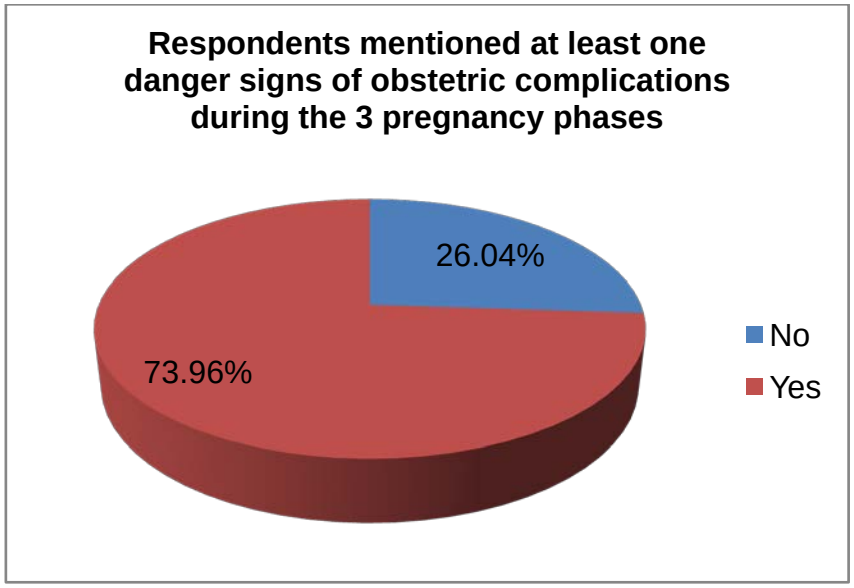

Figure 4.11 Proportion of respondents aware of danger signs of obstetric complications (N=384)

With reference to the major potential danger signs of obstetric complications that could occur during pregnancy, however, only 28.38% (n=109) of the respondents stated vaginal bleeding, 15.10% (n=58) indicated anaemia, and 13.28% (n=51) stated swollen hands/face (see table 4.8). Moreover, of the respondents, 47.14% (n=181) stated one danger sign; 56% (n=102) stated two, and 17.71% (n=68) stated three danger signs of obstetric complications that can occur during pregnancy (see figure 4.12).

With regard to major danger signs of obstetric complications that can occur during delivery, 38.28% (n=147) of the respondents spontaneously mentioned severe vaginal bleeding; 29.17% (n=112) mentioned prolonged labour; 16.93% (n=65) mentioned baby's hands/feet come first, and 15.36% (n=59) mentioned retained placenta. Of the respondents, 61.72% (n=237) mentioned one danger sign; 44.27% (n=170) mentioned two danger signs, and 28.65% (n=110) cited three danger signs. Only 15.62% (n=60) respondents mentioned four or more danger signs of obstetric complications that can occur during delivery (see figure 4.12).

Table 4.8 Distribution of respondents' awareness of danger signs of obstetric complications that occur during pregnancy, delivery and postpartum (N=384)

Danger signs of obstetric complication	Awareness of					
	Pregnancy		Delivery		Postpartum	
	n	%	n	%	n	%
Vaginal bleeding (severe)	109	28.38	147	38.28	165	42.97
Anaemia or lack of blood	58	15.10	27	7.03	87	22.66
Loss of consciousness	39	10.16	40	10.42	29	7.55
Swollen hands /face, feet /ankles	51	13.28	21	5.47	16	4.17
Severe headache	37	9.64	36	9.38	36	9.38
High fever	34	8.85	25	6.51	21	5.47
No or reduced foetal movement	27	7.03	24	6.25		
Convulsion or fit	26	6.77	14	3.65	19	4.95
Leaking of fluid from vagina	26	6.77	23	5.99		
Severe weakness	24	6.25	18	4.69	16	4.17
Regular contractions prior to 37 weeks	23	5.99				
Severe pelvic or abdominal pain	22	5.73	10	2.60		
Severe nausea and vomiting	18	4.69	11	2.86	16	4.17
Troubled with blurred vision	17	4.43	12	3.12	11	2.86
Persistent back pain	15	3.91	16	4.17		
Accelerated foetal movement	12	3.12	16	4.17		
Difficulty in breathing	24	6.25	32	8.33	20	5.21
Labour lasting more than 12 hours			112	29.17		
Placenta not delivered 30 minutes after baby born			59	15.36		
Wrong lie of the baby			46	11.98		
Baby's hand or feet come first			65	16.93		
Cord round the neck of the baby			18	4.69		
Cord comes first before the baby			23	5.99		
Inverted uterus			24	6.25		
Awareness of heart beat			18	4.69	13	3.38
Severe calf pain					13	3.4
Pain in the abdomen					17	4.43
Foul smelling vaginal discharge					33	8.59

Regarding awareness of danger signs of obstetric complications that can occur during the postpartum period, 42.97% (n=165) of the respondents recalled severe vaginal bleeding; 22.66% (n=87) recalled anaemia; 9.38% (n=36) recalled severe headache, and 8.59% (n=33) recalled foul smelling vaginal discharge as danger signs of obstetric complications during the postpartum period.

Of the respondents, 57.03% (n=219) mentioned at least one danger sign of obstetric complications; 25.52% (n=98) mentioned two; 15.88% (n=61) mentioned three, and 7.29% (n=28) mentioned four danger signs of obstetric complications during the period after delivery were (see figure 4.12).

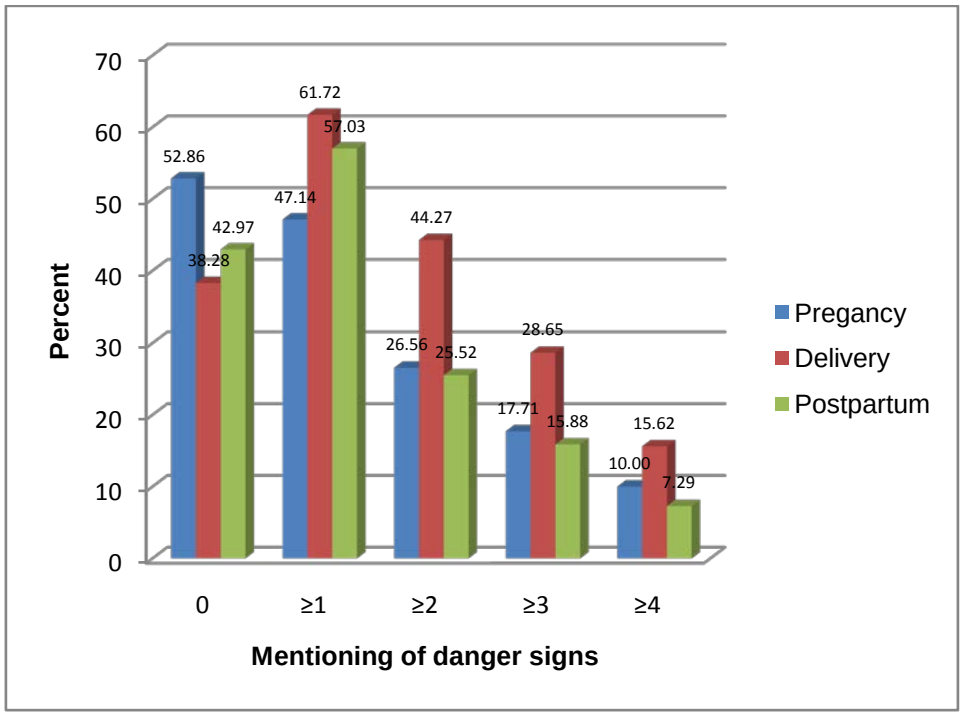

Figure 4.12 Percent of respondents who knew 0, ≥1, ≥2, ≥3 and ≥4 danger signs of obstetric complications during pregnancy, delivery and after delivery (N=384)

4.3.4.2 Respondents' experience of obstetric complications during current pregnancy

When asked whether they had experienced any danger signs of obstetric complications during the current pregnancy, the majority of the respondents 78.65% (n=302) indicated that they had (see figure 4.13).

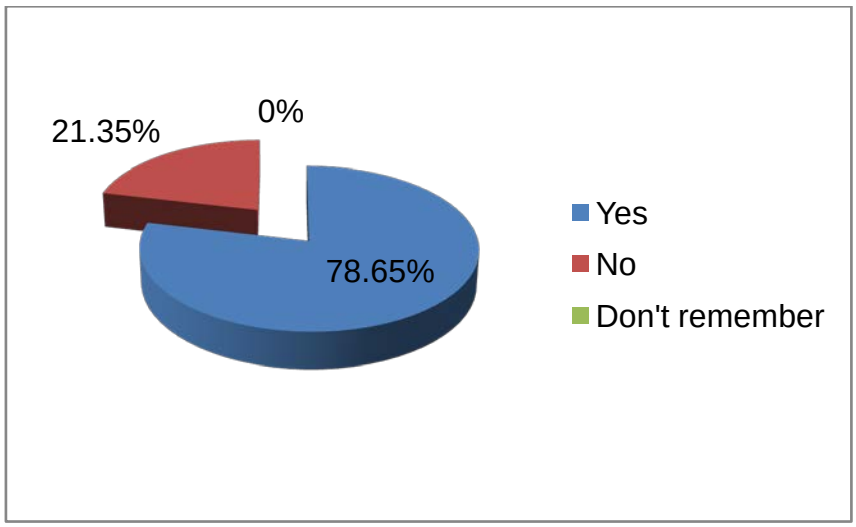

Figure 4.13 Respondents' experience of obstetric complications during current pregnancy (N=384)

4.3.4.3 Respondents' experience of obstetric complications during previous pregnancies

The respondents were asked whether they had experienced any danger signs of obstetric complications during previous pregnancies and delivery. Of the respondents, 46.88% (n=180) had experienced danger signs of obstetric complications during previous pregnancies and childbirth, and 38.02% (n=146) were primigravidas (see table 4.9).

Table 4.9 Respondents' experience of obstetric complications during previous pregnancies and childbirth (N=384)

Experience of obstetric complication during previous pregnancies and childbirth	Frequency (n)	Percent	Valid percent	Cumulative percent
Yes	180	46.88	46.88	46.88
No	58	15.10	15.10	61.98
Primigravida	146	38.02	38.02	100.00
Do not remember	0	0.00	0.00	100.00

4.3.4.4 Respondents' knowledge of women dying of danger signs of obstetric complications

In response to a question whether the respondents had heard of women who died of danger signs of obstetric complications, 59.38% (n=228) reported that they had heard of women who died of danger signs of obstetric complications (see table 4.10).

Table 4.10 Respondents' knowledge of women who died of danger signs of obstetric complications (N=384)

Heard of women dying of obstetric complications	Frequency (n)	Percent	Valid percent	Cumulative percent
Yes	228	59.38	59.38	59.38
No	156	40.62	40.62	100.00
Do not remember	0	0.00	0.00	100.00

4.3.5 Correlation of data analysis with the respondents' characteristics

4.3.5.1 Respondents' place of residence

With regard to the respondents' place of residence, the findings indicate that 64.58% (n=155) of the urban residents and 44.44% (n=64) of the rural residents were aware of danger signs of obstetric complications that may occur during postpartum period. There were a statistically significant association between the respondents' place of residence and awareness of danger signs of obstetric complications that can occur during postpartum periods ($p<0.001$). However, there was no significant statistical association between the respondents' place of residence and awareness of danger sign of obstetric complication that can occur during pregnancy and delivery (see table 4.11).

Table 4.11 Correlation of respondents' place of residence and awareness of danger signs of obstetric complications (N=384)

Place of residence	Aware of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	N	%	n	%
	P=0.476		P=0.464		P<0.001		P=1.000	
Urban	117	48.75	152	63.33	155	64.58	177	73.75
Rural	64	44.44	85	59.03	64	44.44	107	74.31

4.3.5.2 Respondents' distance of residence from health care facilities

With regard to the respondents' distance from health care facility, the study found that 59.66% (n=173) of those who lived within 2 hours of walking distance and 40.43% (n=19) of those who lived more than 2 hours of walking distance from the nearest health care facility were aware of danger signs of obstetric complications that may occur during postpartum periods. Hence, the respondents' distance of residence from nearest health care facility was found to have a statistically significant association with awareness of danger signs during postpartum (p=0.021). However, there was no statistically significance in relation to the respondents' distance of residence from health care facilities and awareness of danger signs of obstetric complications during pregnancy and delivery (see table 4.12).

Table 4.12 Correlation of respondents' distance of residence from health care facilities and awareness of danger signs of obstetric complications (N=384)

Distance of residence from health care facilities	Aware of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	N	%	N	%	n	%
	P=0.365		P=0.146		P=0.021		P=0.946	
≤2 hours	124	42.76	178	61.38	173	59.66	211	72.76
>2 hours	24	51.06	112	48.94	19	40.43	35	74.47
I don't know	23	71.88	26	81.25	27	57.45	38	80.85

4.3.5.3 Respondents' age

The study found that of the respondents, 92.54% (n=62) aged 30-34, 62.78% (n=113) aged 18-24, and 76.47% (n=13) aged 35 and older were aware of danger signs of

obstetric complications. A statistically significant association was observed between the respondents' awareness and age (p<0.001). However, there was no difference in the respondents' awareness of danger signs of obstetric complications during pregnancy, delivery and postpartum period (p<0.05) (see table 4.13).

Table 4.13 Correlation between respondents' age and awareness of danger signs of obstetric complications (N=384)

Age group	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	N	%	N	%	n	%
	P<0.001		P<0.001		P=0.001		P<0.001	
18-24	53	29.44	88	48.89	91	50.56	113	62.78
25-29	72	60.00	85	70.83	69	57.50	96	80.00
30-34	49	73.13	56	83.58	52	77.61	62	92.54
35+	7	41.18	8	47.06	7	41.18	13	76.47

4.3.5.4 Respondents' religion

With regard to the respondents' religious affiliation, it was found that 42.14% (n=59) of Orthodox Christian, 49.50% (n=100) of Protestant Christian, 41.18% (n=14) of Muslims, 100.00% (n=4) of Catholic Christian and 100.00% (n=4) of Traditional religious followers were aware of danger signs of obstetric complications that can occur during pregnancy (p=0.006). However, there were no significant associations between religious affiliation and awareness of danger signs of obstetric complication that can occur during delivery and postpartum period (see table 4.14).

Table 4.14 Correlation of respondents' religious affiliation and awareness of danger signs of obstetric complications (N=384)

Religion	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	N	%	N	%	n	%
	P=0.006		P=0.084		P=0.145		P=0.115	
Orthodox	59	42.14	83	59.29	85	60.71	103	73.57
Protestant	100	49.50	124	61.39	109	53.96	152	75.25
Muslim	14	41.18	22	64.71	18	52.94	21	61.76
Catholic	4	100.00	4	100.00	4	75.00	4	100.00
Traditional	4	100.00	4	100.00	4	100.00	4	100.00

4.3.5.5 Respondents' education

In regard to the respondents' educational level, it was found that 50.40% (n=63) of those who had no schooling, 51.52% (n=68) of those who had completed Grade 1-8, 64.38% (n=47) of those who had completed Grade 9-12 and 75.93% (n=41) of those who had completed Grade 12 and further were aware of danger signs of obstetric complications that can occur during postpartum period. Therefore, education was found to be associated with the respondents' awareness of danger signs that can occur during postpartum (p=0.004). However, there was no significant association between the respondents' education level and awareness of danger signs of obstetric complications that can occur during pregnancy and delivery. Moreover, educational level did not play a positive role in relation to the respondents' overall awareness of danger signs of obstetric complications (see table 4.15).

Table 4.15 Correlation of respondents' education level and awareness of danger signs of obstetric complications (N=384)

Education	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	N	%	N	%	n	%
	P=0.164		P=0.312		P=0.004		P=0.275	
No schooling	53	42.40	78	62.40	63	50.40	94	75..20
Grade 1-8	58	43.94	76	57.58	68	51.52	92	69.70
Grade 9-12	39	53.42	44	60.27	47	64.38	53	72.60
Grade 12+	31	57.41	39	72.22	41	75.93	45	83.33

4.3.5.6 Respondents' occupation

Regarding the respondents' occupation, it was found that 89.36% (n=42) of government employees; 86.67% (n=26) of traders; 73.58% (n=142) of housewives, and 67.06% (n=57) of farmers were aware of danger signs of obstetric complications and the difference was statistically significant regarding awareness and occupation (p=0.008). There were no differences in the respondents' awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery in respect of occupation (p<0.05) (see table 4.16).

Table 4.16 Correlation of respondents' occupation and awareness of danger signs of obstetric complications (N=384)

Occupation	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	N	%	n	%
	P<0.001		P=0.002		P<0.001		P=0.008	
Trader	18	60.00	21	70.00	20	66.67	26	86.67
Housewife	89	46.11	120	62.18	115	59.58	142	73.58
Government employee	36	76.60	39	82.98	39	82.98	42	89.36
Farmer	24	28.24	43	50.59	36	42.35	57	67.06
Private employee	10	58.82	10	58.82	10	29.41	11	64.71
Other	4	33.33	4	33.33	4	33.33	6	50.00

4.3.5.7 Respondents' marital status

As regards the respondents' marital status, it was found that 42.86% (n=6) of those who were single, 44.90% (n=154) of those who were married, and 77.78% (n=21) of those who were separated, divorced or widowed were aware of danger signs of obstetric complications that can occur during pregnancy. Further, 42.86% (n=6) of those who were single, 60.93% (n=209) of those who were married, and 81.48% (n=22) of those who were separated/divorced/ widowed were aware of danger signs of obstetric complications that can occur during delivery. The findings also indicated that 7.14% (n=1) of those who were single, 57.43% of those who were married and 77.78% (n=21) of those who were separated, divorced or widowed were aware of danger signs of obstetric complications. There was a significant association between the respondents' marital status and awareness of danger signs of obstetric complications that can occur during pregnancy (p=0.004), delivery (p=0.036) and postpartum period (p<0.001). However marital status did not play a vital role in the respondents' overall awareness of danger signs of obstetric complications (see table 4.17).

Table 4.17 Correlation of respondents' marital status and awareness of danger signs of obstetric complications (N=384)

Marital status	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	N	%	n	%
	P=0.004		P=0.036		P<0.001		P=0.06	
Single	6	42.86	6	42.86	1	7.14	7	50.00
Married	154	44.90	209	60.93	197	57.43	254	74..05
Separated/ Divorced/Widowed	21	77.78	22	81.48	21	77.78	23	85.19

4.3.5.8 Respondents' family history of chronic medical diseases

Regarding the respondents' family history of chronic medical diseases, it was found that 82.69% (n=86) of those who had a family history of chronic medical diseases and 70.71% (n=198) of those who had no family history of chronic medical diseases were aware of danger signs of obstetric complications. A statistically significant association was observed between the respondents' awareness of danger signs of obstetric complications and family history of chronic medical diseases (p=0.025). There was no difference in the respondents' awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery in relation to family history of chronic medical diseases (p<0.05) (see table 4.18).

Table 4.18 Correlation of respondents' family history of chronic medical diseases and awareness of danger signs of obstetric complications (N=384)

Family history of CMDs	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	N	%	n	%
	P=0.004		P=0.002		P<0.001		P=0.025	
Yes	62	59.62	78	75.00	79	75.96	86	82.69
No	119	42.50	159	56.79	140	50.00	198	70.71

4.3.5.9 Respondents' number of pregnancy

With regard to the respondents' number of pregnancy, it was found that 60.27% (n=88) of those who were pregnant for the first time, 82.46% (n=188) of those who were

pregnant for the second to the fifth time, and 80.00% (n=8) of those who were pregnant for sixth time or more were aware of danger signs of obstetric complications. A statistically significant association was found between the respondents' awareness of danger signs of obstetric complications and number of pregnancies (p<0.001). There was no difference in awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery related to the respondents' number of pregnancy (n<0.05) (see table 4.19).

Table 4.19 Correlation of respondents' number of pregnancy and awareness of danger signs of obstetric complications (N=384)

No of pregnancy	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	N	%	n	%
	P<0.001		P<0.001		P=0.007		P<0.001	
1	47	32.19	66	45.21	69	47.26	88	60.27
2-5	130	57.02	164	71.93	145	63.60	188	82.46
6+	4	40.00	7	70.00	4	50.00	8	80.00

4.3.5.10 Respondents' age at first birth

With regard to the respondents' age at first birth, it was found that 69.23% (n=9) of those who gave birth for the first time before 15 years, 81.81% (n=144) of those who gave birth for the first time between 16 and 20, 82.35% (n=43) of those who gave birth for the first time at 21 or after, and 60.27% (n=80) of primigravida were aware of danger signs of obstetric complications. Therefore there was a significant statistical association between the respondents' age at first birth and awareness of danger signs of obstetric complications (p<0.001). There was no difference in awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery related to the respondents' age at first birth (n<0.05) (see table 4.20).

Table 4.20 Correlation of respondents' age at first birth and awareness of danger signs of obstetric complications (N=384)

Age at first birth	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	n	%	n	%
	P<0.001		P<0.001		P=0.002		P<0.001	
-15	6	46.15	8	61.54	5	38.46	9	69.23
16-20	100	56.81	127	72.16	109	61.93	144	81.81
21+	28	57.14	36	73.47	36	73.47	43	82.35
Primigravida	47	32.19	66	45.21	69	47.26	88	60.27

4.3.5.11 Respondents' place of most recent birth

Regarding the respondents' place of most recent birth, it was found that 82.03% (n=105) of those who gave birth at home with the assistance of family or TBA, 90.91% (n=10) of those who gave birth at home with the assistance of HEW, 81.44% (n=79) of those who gave birth in health care facilities, 60.27% (n=88) of primigravidas, and 100.00% (n=2) of those who gave birth elsewhere were aware of danger signs of obstetric complications. A significant statistical association was found between the respondents' place of most recent birth and awareness of danger signs of obstetric complications (p<0.001). There was no difference in the respondents' awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery related to their age at first birth (n<0.05) (see table 4.21).

Table 4.21 Correlation of respondents' place of most recent birth and awareness of danger signs of obstetric complications (N=384)

Place of most recent birth	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	N	%	n	%	N	%	n	%
	P<0.001		P<0.001		P=0.026		P<0.001	
Home (family/TBA)	77	60.16	90	70.31	76	59.38	105	82.03
Home (HEWs)	7	63.64	8	72.73	7	63.64	10	90.91
Health facility	48	49.48	72	74.23	-66	68.04	79	81.44
Other	2	100.00	1	50.00	1	50.00	2	100.00
Primigravida	47	32.19	66	45.20	69	47.26	88	60.27

4.3.5.12 Respondents' ANC visits

Regarding the respondents' ANC visits, it was found that 70.86% (n=107) of those who had their first ANC visit, 82.48% (n=113) of those who had their second visit, 71.85% (n=46) of those who had their third visit, and 56.25% (n=18) of those who had their fourth or more visits were aware of danger signs of obstetric complications. The difference was statistically significant between the respondents' awareness and number of antenatal follow-up visits (p=0.01). However, there was no significant statistical association between the respondents' ANC visit and awareness of danger signs of obstetric complications that can occur during pregnancy, delivery and postpartum period (see table 4.21).

Table 4.22 Correlation of the respondents' number of ANC visits and awareness of danger signs of obstetric complications (N=384)

ANC visit	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	n	%	n	%
	P=0.051		P=0.061		P=0.084		P=0.010	
1	59	39.07	86	56.95	78	51.66	107	70.86
2	75	54.74	96	70.07	89	64.96	113	82.48
3	33	51.56	39	60.94	37	57.81	46	71.85
4+	14	43.75	16	50.00	15	46.88	18	56.25

4.3.5.13 Respondents' months booked for ANC

Regarding the respondents' months booked for ANC, it was found that 71.07% (n=113) of those who booked before 4 months of pregnancy, 57.58% (n=95) of those who booked between 5 and 6 months, 51.02% (n=25) of those who booked between 7 and 8 months, and 36.36% (n=4) of those who booked at 9 months or later were aware of danger signs of obstetric complications that may occur during labour and childbirth. In addition it was observed that 65.41% (n=104) of those who booked before 4 months, 50.91% (n=84) of those who booked between 5 and 6 months, 51.02% (n=25) of those who booked between 7 and 8 months, and 54.54% (n=6) of those who booked at 9 months or later were aware of danger signs of obstetric complications that may occur after birth. A statistically significant association was found between the respondents' months booked and awareness of danger signs of obstetric complications both during delivery (p=0.006) and postpartum period (p=0.048).

However, there was no significant statistical association between the respondents' months booked and awareness of danger signs of obstetric complications that may occur during pregnancy and, in general, months booked were not associated with awareness of danger signs of obstetric complications (see table 4.23).

Table 4.23 Correlation of respondents' months booked for ANC and awareness of danger signs of obstetric complications (N=384)

Month booked	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	N	%	n	%	N	%	n	%
	P=0.294		P=0.006		P=0.048		P=0.69	
-4	83	52.20	113	71.07	104	65.41	121	76.10
5-6	75	45.45	95	57.58	84	50.91	122	73.94
7-8	19	38.78	25	51.02	25	51.02	34	69.39
9+	4	36.36	4	36.36	6	54.54	9	63.64

4.3.5.14 Respondents' previous history of danger signs of obstetric complications

With regard to the respondents' previous history of danger signs of obstetric complications, it was found that 85.00% (n=153) of those who had no previous history of danger signs of obstetric complications, 74.14% (n=43) of those who had a history of danger signs of obstetric complications, and 60.27% (n=88) of the primigravidae were aware of danger signs of obstetric complications. There was a statistically significant difference between the respondents' awareness and history of danger signs of obstetric complication during previous pregnancy and childbirth ($p<0.001$). There was no difference in the respondents' awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery related to a previous history of danger signs of obstetric complications ($n<0.05$) (see table 4.24).

Table 4.24 Correlation of respondents' previous history of danger signs of obstetric complications and awareness of danger signs of obstetric complications (N=384)

Previous history of danger signs	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	N	%	n	%	N	%	n	%
	P<0.001		P<0.001		P=0.004		P<0.001	
Yes	113	62.78	135	75.00	118	65.56	153	85.00
No	21	36.21	36	62.07	32	55.17	43	74.14
Primigravida	47	32.19	66	45.21	69	47.26	88	60.27

4.3.5.15 Respondents' knowledge of women dying of danger signs of obstetric complications

It was found that 85.96% (n=196) of the respondents who had heard of women dying of obstetric complications were aware of danger signs of obstetric complications compared to 56.41% (n=88) of those who had not. A statistically significant association was found between the respondents' awareness of danger signs of obstetric complications and hearing of women dying of danger signs of obstetric complications ($p<0.001$). There was no difference in the respondents' awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery related to hearing of women dying of danger signs of obstetric complications ($n<0.05$) (see table 4.25).

Table 4.25 Correlation of respondents' hearing of women dying of danger signs and awareness of danger signs of obstetric complications (N=384)

Heard of women dying of danger signs	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	N	%	n	%
	P<0.001		P<0.001		P<0.001		P<0.001	
Yes	143	62.72	174	76.32	156	68.42	196	85.96
No	38	24.36	63	40.38	63	40.38	88	56.41

4.3.5.16 HEW home visit to respondents to talk about childbirth-related issues

With regard to the HEW home visit to the respondents to talk about childbirth-related issues, it was found that 84.03% (n=121) of those who agreed, 95.83% (n=23) of those who were undecided, and 64.82% (n=140) of those who disagreed were aware of

danger signs of obstetric complications. There was a statistically significant difference between HEW home visits to the respondents to talk about childbirth-related issues and awareness of danger signs of obstetric complications (p<0.001). There was no difference in awareness of danger signs of obstetric complications during pregnancy, during delivery or after delivery related to HEW home visits to respondents to talk about childbirth-related issues (p<0.05) (see table 4.26).

Table 4.26 Correlation of HEW home visits to the respondents to talk about childbirth-related issues and awareness of danger signs of obstetric complications (N=384)

HEW home visit to talk about childbirth-related issues	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	n	%	n	%	N	%	n	%
	P<0.001		P<0.001		P=0.003		P<0.001	
Agree	89	61.81	106	73.61	97	67.36	121	84.03
Undecided	17	70.83	22	91.67	15	62.50	23	95.83
Disagree	75	34.72	109	50.46	107	49.54	140	64.82

4.3.5.17 TBAs and VCHWs availability at HF to attend the respondents during their first visit

With regard to the respondents' perception of TBAs and VCHWs availability at HF to attend them during their first visit, it was found that 91.67% (n=33) of those who agreed, 89.19% (n=33) of those who were undecided, and 70.10% (n=218) of those who disagreed were aware of danger signs of obstetric complications. A significant association was found between the respondents' perception of TBAs and VCHWs availability at health care facilities to attend them during their first visit and awareness of danger signs of obstetric complications (p=0.002).

Furthermore, 69.44% (n=25) of those who agreed, 70.27% (n=26) of those who were undecided, and 41.80% (n=130) of those who disagreed were aware of danger signs of obstetric complications that can occur during pregnancy. A statistically significant association was found between TBA and VCHWs availability at HF to attend the respondents during their first visit and awareness of danger signs of obstetric complications that can occur during pregnancy (p<0.001). However, there was no

significant association between TBA and VCHWs availability at HF to attend the respondents during their first visit and awareness of danger signs of obstetric complications that can occur during delivery and postpartum period (see table 4.27).

Table 4.27 Correlation of TBA and VCHW availability at HF to check respondents during their first ANC visit and awareness of danger signs of obstetric complications (N=384)

TBA and VCHWs availability at HF to attend respondents during their first visit	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	N	%	n	%	N	%	n	%
	P<0.001		P=0.056		P=0.682		P=0.002	
Agree	25	69.44	27	75.00	23	63.89	33	91.67
Undecided	26	70.27	27	72.97	21	56.76	33	89.19
Disagree	130	41.80	183	58.84	175	56.27	218	70.10

4.3.5.18 TBA and VCHW home visit to respondents to give health talk about pregnancy and childbirth-related issues

Regarding the respondents' perception of TBAs and VCHWs visiting their homes to talk about childbirth-related issues, it was found that 93.75% (n=45) of those who agreed, 86.21% (n=25) of those who were undecided, and 69.71% (n=214) of those who disagreed were aware of danger signs of obstetric complications. Therefore, the respondents' perception of TBAs and VCHWs home visits to talk about childbirth-related issues was found to be significantly associated with awareness of danger signs of obstetric complications (p=0.001).

In addition, it was found that 64.58% (n=31) of those who agreed, 62.07% (n=18) of those who were undecided, and 43.00% (n=132) of those who disagreed were aware of danger signs of obstetric complications that can occur during pregnancy. Moreover, it was found that 85.42% (n=41) of those who agreed, 72.41% (n=21) of those who were undecided, and 57.00% (n=175) of those who disagreed were aware of danger signs of obstetric complications that can occur during delivery. A statistically significant association was found between the respondents' perception of TBAs and VCHWs visiting their homes to talk about childbirth-related issues and awareness of danger

signs of obstetric complications that can occur during pregnancy (p=0.005) and delivery (p<0.001).

However, no significant association was found between the respondents' perception of TBAs and VCHWs visiting their homes to talk about childbirth-related issues and awareness of danger signs of obstetric complications that can occur during postpartum period (see table 4.28).

Table 4.28 Correlation of TBAs and VCHWs home visits to respondents to talk about childbirth and awareness of danger signs of obstetric complications (N=384)

TBA and VCHWs visiting the respondents' home to talk about childbirth	Awareness of danger signs during							
	Pregnancy		Delivery		Postpartum		Any	
	N	%	n	%	N	%	N	%
	P=005		P<0.001		P=0.215		P=0.001	
Agree	31	64.58	41	85.42	33	68.75	45	93.75
Undecided	18	62.07	21	72.41	16	55.17	25	86.21
Disagree	132	43.00	175	57.00	170	55.38	214	69.71

No statistically significant association was found between the respondents' ethnic origin, months of pregnancy, and experience of danger signs of obstetric complications during this current pregnancy, shortage of health care workers, waiting time during ANC visit to get services, and ability to access next level of care when needed

In the bivariate logistic regression analysis, no statistically significant association was found between the independent variables place of residence, distance of residence from the nearest health care facility, religion, education, months of pregnancy, age at first birth, months booked for ANC, experience of danger signs of obstetric complications during current pregnancy, and shortage of health care workers, waiting time during ANC visit to get services and ability to access next level of care when needed and the respondents' awareness of danger signs of obstetric complications that can occur during the three pregnancy phases (pregnancy, labour and childbirth or after delivery), and were thus not included in the multivariate logistic regression analysis.

In multivariate logistic regression analysis, the respondents' awareness of danger signs of obstetric complications increased with multigravidas, that is, having two to five pregnancies increased the likelihood by fourfold (OR=*4.17**; 95% CI:*** (1.71-10.20). In addition, hearing of women dying of obstetric complications increased the likelihood of awareness of danger signs of obstetric complications fivefold (OR=*4.02**; 95%CI:*** 2.16-7.49). Moreover, the likelihood of awareness of danger signs of obstetric complications decreased with being a farmer compared to traders (***OR***=*0.20*; ***95%CI:*** 0.05-0.81). It was also found that respondents who had attended two antenatal care sessions tended to be more aware than those who had attended only once (OR=2.06; 95%CI: 1.01-4.21). Table 4.29 illustrates bivariate and multivariate logistic regression analysis of the respondents' likelihood of knowing one or more danger signs of obstetric complications that can occur during pregnancy, during delivery or after delivery.

Table 4.29 Bivariate and multivariate logistic regression analysis of the respondents' likelihood of knowing one or more danger signs during pregnancy, during delivery or after delivery (N=384)

Respondents' demographic and obstetric characteristics	Awareness of danger signs		Bivariate analysis	Multivariate analysis
	Yes	No	OR (95% CI)	OR (95% CI)
Residence				
Urban	177	63	0.97 (0.61-1.56)	
Rural	107	37	1	
Walking distance from the nearest health facility				
-2 Hours	211	79	1	
+2 Hours	35	12	1.09 (0.54-2.21)	
I don't know	38	9	1.58 (0.73-3.42)	
Age group				
18-24	113	67	1	1
25-29	96	24	2.37 (1.38-4.07)	1.18 (0.57-2.41)
30-34	62	5	7.35 (2.82-19.20)	2.47 (0.75-8.12)
35+	13	4	1.93 (0.60-6.15)	0.72 (0.15-3.44)
Ethnicity				
Oromo	239	80	1	1
Amahara	27	9	1.00 (0.45-2.22)	1.07 (0.40-2.83)
Gurage	14	5	0.94 (0.33-2.68)	0.52 (0.14-1.99)
Tigre	4	6	0.22 (0.06-0.81)	0.27 (0.02-3.36)
Religion				

Respondents' demographic and obstetric characteristics	Awareness of danger signs		Bivariate analysis	Multivariate analysis
	Yes	No	OR (95% CI)	OR (95% CI)
Orthodox	103	37	1	
Protestant	152	50	1.09 (0.67-1.79)	
Muslim	21	13	0.58 (0.26-1.28)	
Catholic	4	0	5.80 (0.0)	
Traditional	4	0	5.80 (0.0)	
Education				
No schooling	94	31	1	
1-8	92	40	0.76 (0.44-1.32)	
9-12	53	20	0.87 (0.45-1.68)	
12+	45	9	1.65 (0.72-3.75)	
Occupation				
Trader	26	4	1	1
Housewife	142	51	0.43 (0.14-1.29)	0.35 (0.10-1.22)
Government employee	42	5	1.29 (0.32-5.26)	1.24 (0.24-6.32)
Farmer	57	28	0.31 (0.10-0.98)	0.20 (0.05-0.81)
Private employee	11	6	0.28 (0.07-1.20)	0.88 (0.12-6.47)
Others	6	6	0.15 (0.03-0.72)	0.25 (0.03-2.03)
Marital status				
Single	7	7	1	1
Married	254	89	2.85 (0.97-8.36)	7.95 (0.76-82.66)
Separated	23	4	5.75 (1.29-25.56)	2.68 (0.25-29.07)
Family history of CNCDs				
Yes	86	18	1.98 (1.12-3.50)	1.26 (0.58-2.72)
No	82	198	1	1
Months of pregnancy				
-3	13	7	1	
4-6	130	35	2.00 (0.74-5.39)	
7-8	107	38	1.52 (0.56-4.08)	
9 +	34	20	0.92 (0.31-2.67)	
Number of pregnancy				
1	88	58	1	1
2-5	188	40	3.10 (1.92-4.98)	4.17 (1.71-10.20)
6+	8	2	2.64 (0.54-12.86)	2.76 (0.34-22.12)
Age at first birth				
-15	9	4	1	
16-20	144	32	2.00 (0.58-6.90)	
21+	43	6	3.19 (0.74-13.65)	
Primigravidae	88	58	0.67 (0.20-2.29)	
Place of most recent birth				
Home - Family/TBA	105	23	1	1
Home (HEWs)	10	1	2.19 (0.27-17.97)	0.88 (0.08-10.21)
Health facility	79	18	0.96 (0.49-1.90)	0.91 (0.37-2.25)

Respondents' demographic and obstetric characteristics	Awareness of danger signs		Bivariate analysis	Multivariate analysis
	Yes	No	OR (95% CI)	OR (95% CI)
Other	2	0	3.54 (0.0)	1.01 (0.00)
Primigravidae	88	58	0.33 (0.19-0.58)	-
Number of ANC visit				
1	107	44	1	1
2	113	24	0.52 (0.29-0.91)	2.06 (1.01-4.21)
3	46	18	0.95 (0.50-1.82)	0.96 (0.43-2.13)
4+	18	14	1.89 (0.87-4.13)	0.65 (0.25-1.68)
Months booked for ANC				
-4	121	38	1	
5-6	122	43	1.12 (0.68-1.86)	
7-8	34	15	1.40 (0.69-2.85)	
9+	7	4	1.82 (0.50-6.55)	
History of danger signs − current pregnancy				
Yes	223	79	1	
No	61	21	1.03 (0.59-1.80)	
History of danger signs − past childbirth				
Yes	153	27	1	1
No	43	15	0.51 (0.25-1.04)	4.44 (0.49-39.88)
Primigravidae	88	58	0.27 (0.16-0.45)	2.42 (0.23-25.66)
Heard women died of danger signs				
Yes	196	32	4.73 (2.90-7.72)	4.02 (2.16-7.49)
No	88	68	1	1
Ability to access the next level of care when necessary				
Agree	233	86	1	
Undecided	21	3	2.58 (0.75-8.88)	
Disagree	30	11	1.01 (0.48-2.10)	
Waiting time to receive antenatal care during visit				
Agree	212	81	1	
Undecided	20	4	1.91 (0.63-5.76)	
Disagree	52	15	1.32 (0.71-2.48)	
Shortage of health workers				
Agree	161	63	1	
Undecided	62	19	1.28 (0.71-2.30)	

Respondents' demographic and obstetric characteristics	Awareness of danger signs		Bivariate analysis	Multivariate analysis
	Yes	No	OR (95% CI)	OR (95% CI)
Disagree	61	18	1.33 (0.73-2.42)	
TBA and VCHWs available at the health care facility to check respondents during their first visit				
Agree	33	3	1	3.22 (0.67-15.47)
Undecided	33	4	0.75 (0.16-3.62)	2.46 (0.27-22.31)
Disagree	218	93	0.21 (0.06-0.71)	1
HEW visit respondents' home to talk about childbirth-related issues				
Agree	121	23	1	1
Undecided	23	1	4.37 (0.56-34.00)	0.15 (0.01-1.73)
Disagree	140	76	0.35 (0.21-0.59)	0.32 (0.07-1.49)
TBA and VCHWs visit respondents to talk about childbirth-related issues				
Agree	45	3	1	3.16 (0.67-14.87)
Undecided	25	4	0.42 (0.09-2.01)	0.48 (0.05-4.87)
Disagree	214	93	0.15 (0.05-0.51)	1

4.4 OVERVIEW OF THE FINDINGS

The study findings emphasised the respondents' awareness of danger signs of obstetric complications. The respondents attended antenatal care in four health care facilities of East Wollega zone. Of the respondents, 74.00% (n=284) recalled at least one danger sign of obstetric complications during pregnancy, childbirth or after delivery. This finding was significantly associated with the respondents' number of pregnancy, number of antenatal care visits made, occupation and hearing of someone who died of danger signs of obstetric complications.

4.5 CONCLUSION

This chapter discussed the data analysis and interpretation, and findings. The focus was on the respondents' general characteristics, awareness of danger signs of obstetric

complications and correlation between the respondents' general characteristics and their awareness of danger signs of obstetric complications.

Chapter 5 discusses the conclusions and makes recommendations for practice and further research.

CHAPTER 5

Findings, conclusions and recommendations

5.1 INTRODUCTION

Chapter 4 presented the data analysis and interpretation, and the results. This chapter summarises the findings, presents the conclusions and makes recommendations for practice and education and further research.

5.2 PURPOSE, RESEARCH DESIGN AND METHODOLOGY OF THE STUDY

The researcher observed that pregnant women in East Wollega failed to reach health care facilities before severe forms of obstetric complications arose in which both mother and baby became at risk of dying from obstetric complications. This could be due to a lack of awareness of the danger signs of obstetric complications. Awareness of the danger signs of obstetric complications is the essential first step in accepting appropriate and timely referral to obstetric care.

The purpose of the study, then, was to assess the awareness of danger signs of obstetric complications among pregnant women attending antenatal care (ANC) services in the four health care facilities of East Wollega. The researcher selected a quantitative, descriptive, cross-sectional design for the study. The researcher considered this the most suitable design to give a detailed description of the awareness of danger signs of obstetric complications among pregnant women attending antenatal care in the four selected health care facilities of East Wollega.

Non-probability sampling was used to select a sample of 384 pregnant women above the age of 18 years who came for ANC services at Nekemte General Hospital, Nekemte Health Care Centre, Uka Health Care Centre, and Sasiga Health Care Centre in East Wollega, Ethiopia. Data was collected by means of a structured questionnaire. The questionnaire was developed from the literature review of similar studies in other African

countries and tools developed and used to study birth preparedness and complication readiness.

Data was entered and analysed with SPSS version 16 programme. Categorical variables were tabulated using frequencies and percentages. In this study awareness of danger signs of obstetric complications was defined as the ability to mention at least one recognised danger sign during pregnancy, delivery or after delivery. The association between demographic and obstetric factors and awareness of danger signs of obstetric complications were determined by using the Chi-square test. The differences were regarded as significant when $p<0.05$.

Bivariate logistic regression analysis was used to identify factors associated with awareness of danger signs of obstetric complications. Variables significant in the bivariate analysis were then entered into a multivariate logistic regression analysis. The associations between awareness and each independent variable were estimated by OR and 95% CI. A CI was considered statistically significant when the interval between the upper and lower values did not include 1.

5.3 SUMMARY OF THE FINDINGS

The findings are summarised and presented under the following headings:

- Awareness of danger signs of obstetric complications.
- Factors associated with awareness of danger signs of obstetric complications.

5.3.1 Awareness of danger signs of obstetric complications

Awareness of danger signs of obstetric complications during pregnancy, labour and postpartum period is the first essential step for appropriate and timely actions. Pregnant women's awareness of danger signs of potential obstetric complications was expected to influence their decisions regarding when to decide to seek medical care. Accordingly, awareness of danger signs of obstetric complications was expected to help women in early recognition of danger signs when complications occur and decrease the time to decide to seek medical care which makes a difference between life and death if all such

danger signs are well known. This makes it very important for women to be aware of all danger signs of obstetric complications.

In this study about 26.04% (n=100) of the respondents were not aware of any danger signs of obstetric complications. This indicates poor awareness of danger signs and a potentially high chance of poor pregnancy outcome although this finding was lower than studies conducted in Tanzania and Kenya (Pembe et al 2009:3; Mutiso et al 2008:279-80). In addition, 52.86% (n=203) of the respondents were unaware of danger signs that could arise during pregnancy, 38.28% (n=147) were unaware of danger signs that could arise during delivery, and 43.00% (n=165) were unaware of danger signs that could arise after birth. These findings were lower than findings in Tanzania and Ethiopia (Pembe et al 2009:3; Hiluf & Fantahun 2007:3-4). Nevertheless, as this study was conducted among pregnant women attending ANC and 60.68% (n=232) of the respondents had attended at least two ANC sessions, the findings indicate that there is inadequate emphasis on informing pregnant women about danger signs of obstetric complications during antenatal sessions where all of them should have the information about danger signs of obstetric complications. The fact that many of the respondents were not aware of danger signs that could occur during pregnancy, delivery and postnatal period could adversely affect their preparedness and readiness for pregnancy complications.

Haemorrhage, sepsis, hypertensive disorders of pregnancy and obstructed labour are the major causes of maternal mortality (Khan et al 2006:1068). In this study, only 28.38% (n=109) of the respondents indicated vaginal bleeding during pregnancy as a danger sign of obstetric complications. These findings were lower than studies in Kenya and Ethiopia (Mutiso et al 2008:279-280; Hailu et al 2010:28;), but higher than findings in Ethiopia, Tanzania and Malawi (Hiluf & Fantahun 2008:15; Pembe, Urassa, Carlstedt, Lindmark, Nystromand & Darji 2009:3; Kumbani & Fantahun 2006:45). This difference in Ethiopia and other countries might be due to socio-cultural differences or in intensity and quality of implementation of health interventions.

Of the key danger signs during childbirth, such as severe vaginal bleeding, prolonged labour, convulsions and retained placenta, only 38.28% (n=147) of the respondents mentioned vaginal bleeding as a danger sign of obstetric complications. This is lower than Hailu, Gebremariam and Alemseged (2010:29) and Kabakyenga, Ostergren,

Turyakira and Petersson's (2011:5) findings in Ethiopia and Uganda, but higher than findings in Tanzania, Ethiopia and Malawi by Pembe et al (2009:4), Hiluf and Fantahun (2008:16) and Kumbani and Mclnerney (2006:46). This difference might be due to difference in socio-economic and intensity of health interventions activities in the areas where these studies were conducted.

Moreover, in this study only 29.17% (n=112) of the respondents were aware of prolonged labour as a danger sign of obstetric complications despite its association with both maternal and foetal morbidity and mortality. This was lower than Hailu et al's (2010:29) finding in Ethiopia but higher than findings in Pakistan, Uganda, Tanzania and Ethiopia between 2000 and 2011 (Hasan & Nisar 2002:152; Kabakyenga et al 2011:5; Kaye 2000:560; Pembe et al 2009:3-4; Hiluf & Fantahun 2008:16). However, in The Gambia Anya, Hydara and Jaiteh (2008:5) found that prolonged labour was not even recognised as a danger sign of obstetric complications by urban and rural women attending ANC. The difference in awareness might be due to whether prolonged labour is included among danger signs in counselling during ANC, or the perception of prolonged labour in these culturally different areas.

Some of the danger signs of obstetric complications which are important to identify during the postpartum period include severe vaginal bleeding following childbirth, loss of consciousness after childbirth, and fever. Postpartum haemorrhage is a leading direct cause of maternal deaths (WHO et al 2010:11-12). In this study, 42.97% (n=165) of the respondents indicated severe vaginal bleeding as a danger sign of obstetric complications during the postpartum period. This is lower than findings in Ethiopia and Bangladesh (Hailu et al 2010:29; Syed, Asiruddin, Helal, Mannan & Murray 2006:514), but higher than findings in Tanzania, Ethiopia and Malawi (Pembe et al 2009:4; Hiluf & Fantahun 2008:16; Kumbani & Mclnerney 2006:46). These differences in awareness could be due to a difference in socio-economic, cultural, and health interventions.

Furthermore, the respondents were more aware of danger signs that could occur during the postpartum period than during pregnancy and delivery. Severe vaginal bleeding during postpartum period was the most frequently mentioned danger signs of obstetric complications (42.97%; n=165). Higher awareness of vaginal bleeding after delivery was also reported in Ethiopia (Hailu et al 2010:28-29), rural Tanzania (Pembe et al 2009:4), and in a poor fishing community in Karachi, Pakistan (Hasan & Nisar

2002:152). The reason excessive vaginal bleeding during the postpartum period is most commonly recognised as a danger sign of obstetric complications may be that it is the most visible sign and the most common cause of maternal death immediately after delivery (WHO et al 2010:11-12; El-Refacy & Rodeck 2003:205-6). Furthermore, the mean interval from the onset of severe bleeding to death is two hours in contrast to an average of 12 hours for bleeding during pregnancy and delivery (WHO 2005:61-64; Maine 1993:42). In Uganda, Kabakyenga et al (2011:5) reported that severe vaginal bleeding during childbirth was the most recognised danger sign and vaginal bleeding during the postpartum period was the second most recognised danger sign. The disparity in Uganda might be due to chance or a lack of awareness on time delineation between the period of childbirth and postpartum period.

5.3.2 Factors associated with awareness of danger signs of obstetric complications

This study revealed that the respondents' occupation, number of pregnancy, number of ANC visits made, and hearing of women who had died of obstetric complications were strongly associated with awareness of danger signs of obstetric complications. Increased awareness among multigravida women might be due to experience of repeated exposure to pregnancy and childbirth, and events in the community, such as hearing of someone who had died of obstetric complications.

In Egypt, Rashad and Essa (2010:1302-04) found that occupation appeared to influence women's awareness of danger signs of obstetric complications. For example, traders or working women have better opportunity to share experiences with others than farmers and housewives. However, this finding contrasted with Pembe's (2010:33-34) finding in rural Tanzania.

Increased awareness of danger signs of obstetric complications among pregnant women who reported or had heard of women who died of obstetric complications might be due to the unforgettable experience of pregnancy-related deaths. This concurred with Pembe et al's (2009:14-15) finding in Tanzania.

In this study, the respondents' educational level did not seem to play a role in increasing awareness of danger signs of obstetric complications. However, Rashad and Essa

(2010:1305), Mutiso et al (2008:279-280) and Pembe et al (2009:6) found that women with higher levels of education were more aware of danger signs of obstetric complications than women with lower or no formal education. Despite these conflicting results, women's education is important for understanding health messages and to be able to make decisions regarding their health and care.

The study also found a significant difference in awareness of danger signs of obstetric complications between the respondents who made one antenatal visit and those who made two or more ANC visits. In Tanzania, Pembe et al (2009:6) found that women who made four or more ANC visits were more aware of danger signs of obstetric complications than those who made less than four ANC visits, independent of gestational age at booking. This study found no statistically significant difference in awareness of danger signs of obstetric complications between the respondents who booked for antenatal care before and those who booked after four months of pregnancy. This finding concurs with Pembe et al's (2009:6) study. Hence provision of information aimed at increasing awareness of risk factors and danger signs of obstetric complications in pregnancy are a challenge to ANC programmes and the difficulties involved should not be underestimated.

5.4 CONCLUSIONS

The findings of the present study provided information on the respondents' awareness of danger signs of obstetric complications. Every woman should be made aware of the possibility of complications during pregnancy, childbirth and the postpartum period. Not only pregnant women but other family and community members should be aware of and have information on danger signs of obstetric complications. This study targeted pregnant women attending ANC and found the proportion of respondents who were aware of danger signs of obstetric complications inadequate. Awareness of danger signs of obstetric complications was associated with the number of antenatal visits, but not with months booked for antenatal care. The absence of association between awareness of danger signs of obstetric complications and education was of concern.

The study also demonstrated a strong association between the respondents' awareness of danger signs of obstetric complications and occupation, number of pregnancy and heard about women who died of obstetric complications. It is irresponsible to let women

learn danger signs of obstetric complications from the experience of hearing about women who have died of obstetric complications and repeated exposure to pregnancy.

5.5 CONTRIBUTION OF THE STUDY

This study provided significant information on the respondents', who were pregnant women attending ANC in four selected health facilities of East Wollega zone, awareness of danger signs of obstetric complications. The information should benefit both service providers and district health management teams in improving the quality of ANC services, particularly the quality of information provided to pregnant women in the health care facilities. Importantly, the findings should help and guide health care practitioners in designing appropriate behaviour change communication strategies.

5.6 LIMITATIONS OF THE STUDY

The researcher identified two limitations in the present study.

First, the study was a public health care facility-based cross-sectional study limited to women attending ANC services in the four selected health care facilities of East Wollega, Ethiopia. The findings may therefore fail to reflect the situation of other areas of Ethiopia as there are differences in geographical features, intensity of health care promotion activities, health care coverage, and differences in local staff's skills and availability of different interventions.

Secondly, non-probability sampling was used to select the sample (respondents). Although this sampling technique was appropriate for this study, a similar study with probability sampling might produce different results. Hence the sampling technique was too limited for broad generalisations.

5.7 RECOMMENDATIONS

Based on the findings and conclusions, the researcher makes the following recommendations for practice and further research to increase awareness of danger signs of obstetric complications.

5.7.1 Practice and education

The researcher recommends that:

- The district health office, the regional health bureaus and the federal ministry of health should review and improve the quality of ANC programmes both in the nursing education syllabus/curriculum and in the routine health promotion and service promotion activities.
- Interventions targeting improvement of maternal health should consider the quality of ANC, including the quality of information offered to pregnant women and the community at large, especially focusing on danger signs of obstetric complications. Awareness of key danger signs needs to be given priority as it prepares women and their families for timely and appropriate decisions and action in case of complications.
- The education/information given to pregnant women should not only be through routine antenatal care, but also through existing and appropriate channels, such as community-based interventions and the mass media.
- The Department of Health and nursing education institutions should introduce maternal health issues in their syllabi.

5.7.2 Further research

Further research should be conducted on the following topics:

- An investigation into the effectiveness of ANC health education at rural and urban health care facilities.
- Challenges encountered by health care practitioners in educating/informing pregnant women on the danger signs of obstetric complications.

- Perceptions and feelings of health care practitioners on pregnant women's and the community's awareness of danger signs of obstetric complications.
- Regulatory guidelines for standardising, maintaining, monitoring and sustaining the quality of information offered to pregnant women and the community at large, especially focusing on danger signs of obstetric complications.

5.8 CONCLUDING REMARKS

This chapter summarised the findings, presented the conclusions and made recommendations for practice and education and further research. The study was a facility-based study among pregnant women attending ANC services in four selected health care facilities in East Wollega, Ethiopia, and provided concrete information on the respondents' awareness of danger signs of obstetric complications. The findings should benefit both service providers and district health management teams in improving the quality of ANC services, particularly the quality of information provided. Most importantly, the findings should raise awareness of the danger signs of obstetric complications and lead to the development of focused behaviour change strategies for pregnant women.

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

HSHDC 40/2011

Date of meeting: 4 November 2011 Student No: 4329-007-8

Project Title: Awareness of danger signs of obstetric complications among pregnant women attending antenatal care in Eastern Wollega, Ethiopia.

Researcher: Abera Workneh Wanboru

Degree: Masters in Public Health Code: DIS4986

Supervisor: Dr EN Monama
Qualification: D Litt et Phil
Joint Supervisor: Mrs TG Lumadi

DECISION OF COMMITTEE

Approved [√] **Conditionally Approved** [ ]

Prof E Potgieter
CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

Prof MC Bezuidenhout
ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

BIIROO EEGUMSA FAYYAA OROMIYAA

OROMIA HEALTH BUREAU
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Lakk/Ref. No. BEDHBTFH/1-d/2159

Guyyaa /Date 10-5-2005

Waajjira Eegumsa fayyaa Godina Wallaggaa-Bahaatiif

Naqamtee

Dhimmi: **Xalayaa deeggarsaa ilaala**

Akkuma beekamu Biiroon keenya ogeeyyii, dhaabbilee akkasumas namoota qorannoo gaggeessuuf piroppoozaala dhiyeeffatan piroppoozaala isaanii madaaluun akkanumas iddoo biraatti ilaalchisanii fudhatama argatee (approved) dhiyaateef, piroppoozaala isaanii ilaaludhaan waraqaa deeggarsaa ni-kenna. Haaluma kanaan mata-duree " **Awareness of danger signs of obstetric complications among pregnant women attending Antenatal Care in East Wollega, Ethiopia** " jedhurratti **obbo Abera Workneh Wanboru Dhaabbilee Fayyaa Godina keessan keessa jiran** keessatti hojjachuuf piroppoozaalii isaanii Koree "Health Research Ethical Review Committee" **Unvarsiitii Aafrikaa Kibbaatiin "UNISA"** mirkaneessisanii dhiyeeffataniiru.
Haaluma kanaan Biiroon keenyaa piroppoozaala kana ilaaluun qorannoon kun akka hojiirra oolu murteessee jira. Waan kana ta'eef hojii qorannoo kanarratti deeggarsa barbaachisaa ta'e akka gootaniif jechaa, **obbo Abera Workineh Wanboru** wayitii qorannoon kun qaacceffamee xumurame fiiriisaa kooppii tokko Biiroo Eegumsa Fayyaa Oromiyaatiif akka galii godhu garagalchaa xalayaa kanaatiin isaan beeksifna.

Anis, obbo Abera Workineh Wanboru wayitii qorannoon kun qaacceffamee xumurame fiiriisaa kooppii tokko Biiroo Eegumsa Fayyaa Oromiyaatiif akka galii godhu mallattoo kiyyaan mirkaneessa.

Nagaa wajjin

Tujumaa Guutaa

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

Mallattoo_____
Maqaa _____
Guyyaa **10/05/2005**

Lakk. Bilbilaa **0911895878**
G/G

Obbo Abera Workineh Wanboru

Bakka jiranitti

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 5: Data collection tool (questionnaire)

QUESTIONNAIRE ON AWARENESS OF DANDER SIGNS OF OBSTETRIC COMPLICATIONS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN EAST WOLLEGA, ETHIOPIA

Number of questionnaire:

1	**2**	**3**

1. Objectives:

- Assess the awareness of pregnant women attending antenatal care about danger signs of obstetric complications
- Associate demographic and obstetric factors with level of awareness of danger signs of obstetric complications among pregnant women attending antenatal care
- Make recommendations for educational programs on danger signs of obstetric complications

2. Ethical considerations:

All information herewith provided will be treated confidentially. It is not necessary to indicate your name on this questionnaire

3. Instructions

3.1**.** Please answer all questions by providing an "X" in the box corresponding to the chosen alternative

3.2. Please answer all questions as honestly, frankly and objectively as possible

3.3. Answer according to your own personal opinion and experience

3.4. Please hand in the questionnaire to the researcher immediately after completion

Answer the questions by placing an "X" or circle the number in the box corresponding to the answer which is applicable to you.

SECTION A: DEMOGRAPHIC DATA

1. Where do you live?

Place of residence	
1.1. Urban	
1.2. Rural	

2. How far is your home from the nearest healthcare facility?

2.1. Distance from health care facilities in walking hour	
2.2.1. 2 hour or less to health centre	
2.2.2. More than 2 hour to HC	
2.2.3. Do not know	

3. How old are you?

Age at your previous birthday	**ANSWER**
3.1. 18- 24 years	1
3.2. 25-29 years	2
3.3. 30-34	3
3.4. 35 and above	4

4. To what ethnic group do you belong?

Ethnicity		Answer
2.1	Oromo	1
2.2	Amhara	2
2.3	Gurage	3
2.4	Tigre	4

5. What is your religious affiliation?

Religion		
2.1	Christian orthodox	
2.2	Christian protestant	
2.3	Muslim	
2.4	Christian catholic	
2.5	Traditional	

6. What is the highest level of education you have completed?

Highest level of education achieved		
6.1	No schooling	
6.2	Grade 1-8	
6.3	Grade 9-12	
6.4	Grade 12 or beyond	

7. What is your current occupation?

Current occupation		
7.1	Trader	
7.2	Housewife	
7.3	Government employee	
7.4	Farmer	
7.5	Private employee	
7.6	Other(specify)	

8. What is your marital status?

Marital status		
8.1	Single	
8.2	Married	
8.3	Separated, Divorced or Widowed	

SECTION B: PREGNANCY AND DELIVERY HISTORY

9. How many months pregnant are you?

Number of months of pregnancy		
9. 1	3 months or less	
9. 2	4-6 months	
9. 3	7-8 months	
9. 4	9 months or more	

10. How many times were you pregnant including the current one?

(Including those that did not end with a live birth)

Number of pregnancies		
10. 1	One	
10. 2	Two to five	
10. 3	Six or more	

11. How old were you when you first gave birth?

Age at first birth		**ANSWER**
11.1	15 years or younger	1
11.2	16 - 20 years	2
11.3	21 – and older	3
11.4	Primigravida	4

12. Where did you give birth of your most recent birth?

Place of delivery of most recent child		
12.1.	Home by Family /TBA	
12.2.	Home by HEW	
12.3.	Health institution by HW	
12.4	Other (specify)	
12.5	Primigravida	

13. Do you have a family history of one or more of the following conditions?

Chronic medical conditions	
13.1. Asthma	
13.2. Diabetes	
13.3. Hypertension (High blood pressure)	
13.4. Heart disease	
13.5. Others	

SECTION C: ACCESSIBILITY AND AVAILABILITY OF THE HEALTH CARE SERVICES

14. How many times have you visited this health centre or other health facilities for antenatal check up for the current pregnancy (including this visit)?

Number of ANC visit	**Answer**
15.1. One	1
15.2. Two	2
17.3. Three	3
15.4. Four or more	4

15. How many month pregnant were (are) you when you went to health facility for antenatal check-up for first time?

Months booked	**Answer**
16.1. 4th month or before	1
16.2. 5th-6 months	2
16.3. 7-8 months	3
16.4. 9th month or after	4

16. Please answer by selecting the appropriate response in each instance

1. SA = strongly agree; 2. A =Agree; 3. U = undecided; 4. D = disagree; 5. SD = strongly disagree						
	1.SA	2.A	3.U	4.D	5.SD	Official use
1. I am able to access the next level of care when necessary (e.g., going to nearest hospital.						
2. I do not wait too long to receive antenatal care during my visit.						
3. There is always a shortage of health worker (nurses and midwives).						
4. The TBA and volunteer community health worker are always available at the health facility to attend to me during my first check						
5. The HEW visit my household during this pregnancy to talk about child birth related issues						
6. The TBA and volunteer community health worker visit my home during this pregnancy to talk about pregnancy and child birth related issues						

SECTION D: AWARENESS OF DANGER SIGNS AND EXPERIENCE OF OBSTETRIC COMPLICATION

17. What are some of the serious health problems that can occur during **PREGNANCY** that can endanger the life of a pregnant woman?

Scoring				
1. M=Mentioned; 2. NM=Not Mentioned; 3. DN= Do not Know				
	1.M	2.NM	3.DN	Official use
1. Vaginal bleeding				
2. Swollen hands/face, feet/ankle				
3. Troubled with vision/ blurred vision				
4. Severe headaches.				
5. Severe nausea and excessive vomiting				
6. Convulsion/fit				
7. Loss of consciousness				
8. Severe pelvic or abdominal pain				
9. Persistent back pain				
10. Gush (leaking) of fluid from vagina/ water breaks				
11. Regular contractions prior to 37 weeks				
12. No/reduced foetal movement (child does not move)				
13. Accelerated foetal movement				
14. High fever/feels hot				
15. Anaemia (lack of blood)				
16. Difficulty in breathing				
17. Severe weakness				
18. Other (Specify)				

18. What are some of the serious health problems that can occur during **CHILDBIRTH** that can endanger the life of mothers?

Scoring				
1. M=Mentioned; 2. NM=Not Mentioned; DN= Do not Know				
	1.M	2.NM	3.DN	Official use
1. Severe Vaginal bleeding				
2. Swollen hands/face, feet/ankle				
3. Troubled with blurred vision				
4. Severe headaches				
5. Severe nausea and vomiting				
6. Convulsion/fit				
7. Loss of consciousness				
8. Leaking of fluid from vagina 24hours before labour begin				
9. Severe pelvic or abdominal pain				
10. Persistent back pain				
12. Reduced, no fetal movement (child does not move)				
13. Accelerated foetal movement				
14. High fever				
15. Anaemia (lack of blood)				
16. Difficulty in breathing				
17. Severe weakness				
18. Labour lasting >12 hours				
19. Placenta not delivered 30 minutes after baby born				
20. Mal presentation/wrong lie of the baby				
21. Baby's hand or feet comes first				
22. Cord round the neck of the baby				
23. Cord comes first of the baby				
24. Inverted uterus				
25. Awareness of rapid heart rate				
26. Other (Specify)				

19. What are some of the serious health problems that can occur during **PUERPURIEUM (THE FIRST 6WEEKS AFTER BIRTH)** that can endanger the life of mothers?

Scoring				
1. M=Mentioned; 2. NM=Not Mentioned; DN= Do not Know				
	1.M	2.NM	3. DN	Official use
1. Severe/excessive vaginal bleeding				
2. Severe headache				
3. Troubled with blurred vision				
4. Swollen hands/face, feet/ankle				
5. Convulsion/fit				
6. Loss of consciousness				
7. Severe nausea and vomiting				
8. High fever or feeling hot				
9. Foul smelling vaginal discharge				
10. Difficulty in breathing/shortness of breath				
11. Severe weakness				
12. Anaemia (lack of blood)				
13. Awareness of rapid heart rate				
14. Painful and swollen calf				
15. Pain in abdomen				

20. Have you ever experienced any of the following danger signs of obstetric complications during the **current pregnancy**?

Scoring			
1. Y= YES; 2. N=NO; DR= DO NOT REMEMBER			
	1.Y	2.N	3.DR
1. Vaginal bleeding			
2. Swollen hands/face, feet/ankle.			
3. Troubled with vision/ blurred vision			
4. Severe headaches.			
5. Severe nausea and excessive vomiting			
6. Convulsion/fit			
7. Loss of consciousness			
8. Severe pelvic or abdominal pain			
9. Persistent back pain			
10. Gush (leaking) of fluid from vagina/ water breaks			
11. Regular contractions prior to 37 weeks			
12. No/reduced, fetal movement (child does not move)			
13. Accelerated foetal movement			
14. High fever/feels hot			
15. Anaemia (lack of blood)			
16. Difficulty in breathing			
17. Severe weakness			
18. Other (Specify)			

21. Have you ever experienced any of the following danger signs of obstetric complications during your **previous pregnancy and child birth**?

Scoring			
1. Y = YES; 2. N= NO; 2.DR=DO NOT REMEMBERS			
	1.Y	2.N	3. DR
1. Severe Vaginal bleeding			
2. Swollen hands/face, feet/ankle			
3. Troubled with blurred vision			
4. Severe headaches			
5. Severe nausea and vomiting			
6. Convulsion/fit			
7. Loss of consciousness			
8. Leaking of fluid from vagina/ water breaks without labour			
9. Severe pelvic or abdominal pain			
10. Persistent back pain			
12. Reduced, no fetal movement (child does not move)			
13. Accelerated foetal movement			
14. High fever			
15. Anaemia (lack of blood)			
16. Difficulty in breathing			
17. Severe weakness			
18. Labour lasting >12 hours			
19. Placenta not delivered 30 minutes after baby born			
20. Mal presentation/wrong lie of the baby			
21. Baby's hand or feet comes first			
22. Cord round the neck of the baby			
23. Cord comes first of the baby			
24. Inverted uterus			
25. Awareness of rapid heart rate			
26. Other (Specify)			

22. Have you ever heard of someone (family, neighbour or friends) who die of obstetric complication during pregnancy and childbirth?

Scoring			
1. Y = YES; 2. N= NO; 2.DR=DO NOT REMEMBERS			
	1.Y	2.N	3. DR
1. Severe Vaginal bleeding			
2. Swollen hands/face, feet/ankle			
3. Troubled with blurred vision			
4. Severe headaches			
5. Severe nausea and vomiting			
6. Convulsion/fit			
7. Loss of consciousness			
8. Leaking of fluid from vagina/ water breaks without labour			
9. Severe pelvic or abdominal pain			
10. Persistent back pain			
12. Reduced, no fetal movement (child does not move)			
13. Accelerated foetal movement			
14. High fever			
15. Anaemia (lack of blood)			
16. Difficulty in breathing			
17. Severe weakness			
18. Labour lasting >12 hours			
19. Placenta not delivered 30 minutes after baby born			
20. Mal presentation/wrong lie of the baby			
21. Baby's hand or feet comes first			
22. Cord round the neck of the baby			
23. Cord comes first of the baby			
24. Inverted uterus			
25. Awareness of rapid heart rate			
26. Other (Specify)			

THANK YOU FOR YOUR PARTICIPATION

Annexure 6: Afaan Oromo version of data collection tool (Questionnaire)

QUESTIONNAIRE ON AWARENESS OF DANDER SIGNS OF OBSTETRIC COMPLICATIONS AMONG PREGNANT WOMEN ANTENATAL CARE IN EAST WOLLEGA, ETHIOPIA

Name of HF: .....

Number of questionnaire:

1	**2**	**3**

1. Objectives

- Assess the awareness of pregnant women attending antenatal care about danger signs of obstetric complications,
  Hubannoo dubartoota ulfaa tajaajila dahumsa duraa hordoffaa jiranii mallatoowwan dhukkuba balaa/ cimaa yeroo ulfaa, dahumsa fi ulmaa irratti qaban sakatahuuf
- Associate demographic and obstetric factors with level of awareness of danger signs of obstetric complications among pregnant women attending antenatal care,
  Sadarkaa hubannoo mallatoowwan dhukkuba balaa/cimmaa yeroo ulfaa dubartootni ulfaa tajaajila dahumsa dura hoordoffan qaban ciicolee ulfaa fi demographic waliin waltidhuifeenya qaban ilaaluuf
- Make recommendations for educational programs on danger signs of obstetric complications,
  Sagantawwan barnootaaf yaadaa mallatoowwan dhukkuba balaa yeroo ulfaa irratti kennuuf

2. Ethical considerations:

Odeeffanoon isin irraa funaannuu kun hundi isaa icciitiin kan eegamu. Maqaan keessan waraaqaa qorannoo kan irratti hin qabatamu.

3. Qajeelfama

3.1. *Adaraa Mallattoo "X" sanduuqa deebii isin filatanii fundura jiru keessa kaayyaa ykn lakkoofsaa deebii isin filatan fuuldura jirutti maraa.*

3.2. *Adaraa ammaa dandeesanitti deebii dhuguma jettan, kan isinitti fakkaatee fi sirriidha jetanii kan yaadan deebisaa.*

3.3. *Deebiidha jetanii kann yaadan akka yaada dhuunfaa keessan fi muxannoo keessanitti deebisa.*

3.4. Please hand in the questionnaire to the researcher immediately after completion.

Answer the questions by placing an "X" or circle the number in the box corresponding to the answer which is applicable to you.

SECTION A: DEMOGRAPHIC DATA

1. Bakki jireenya keessanii eessa?

Place of residence: Bakka jireenyaa	
1.1. Magaalaa	
1.2. Baadiyyaa	

2. Mannii jireenyaa keessanii dhaabbata fayyaa isinitti dhiwwoo jiru irraa hangam fagaata?

Distance from health facilities in walking hour, Fageenyaa dhaabbilee fayyaa irraa fagaatuu deemsa miilan	
2.1. Buufata fayyaa irraa sa'aa 2 ykn isaa gadi	
2.2. Buufata fayyaa irraa sa'aa 2 ol	
2.3. Hin beeku	

3. Umuriin kee meeqa?

Age at your previous birthday	**ANSWER**
3.1. Waggaa 18 – 24	1
3.2. Waggaa 25 - 29	2
3.3. Waggaa 30 - 34	3
3.4 Waggaa 35 ykn isa ol	4

4. To which ethnic group do you belong? Isin uumata kamitti ramadamtu?

Ethnicity		Answer
4.1	Oromo	1
4.2	Amhara/amaara	2
4.3	Gurage	3
4.4	Tigre	4

5. What is your religious affiliation? Ammantaa kam hordoftu?

Religion		
5.1	Christian orthodox: ortodoksii	
5.2	Christian protestant: peenxee	
5.3	Muslim : Musiliima	
5.4	Christian catholic : Kaatolikii	
5.5	Traditional: kan aadaa	

6. Sadarkaan barnoota inni guddan ati xumurtee (isin xumurtan) meeqa?

Highest level of education achieved		
6.1	No schooling: Mana barnootaa hin seene	
6.2	Kutaa1-8	
6.3	Kutaa 9-12	
6.4	Kutaa 12 ol	

7. What is your current occupation? Hojii maaliin jiraatta?

Current occupation		
7.1	Daldaaltuu	
7.2	Haadha manaa	
7.3	Hojjettuu mootumaa	
7.4	Qottee bultuu	
7.5	Qacarrii ykn Hojii nama dhuunfaa	
7.6	Kan biraa (maqaa dhayi)	

8. What is your marital status? Haalii gaa'ila keetii maal?

Marital status		
8.1	Heerumee hin beeku	
8.2	Gaayilan jiraa/ waliin jiraanna	
8.3	Addaan baanee, Wal hiiknee ykn Abbaan mana na irra du'e jira	

- *Addaan baannee jira jechuun abban mana fi haatii mana sun bakka tokkoo hin jiraatan yoo tahe (sababa adda addan addaan bahanii jirachuu)*

SECTION B: PREGNANCY AND DELIVERY HISTORY

9. Ati amma ulfa ji'a meeqaati?

Number of months of pregnancy		
9. 1	Ji'a 3 ykn achiin dura	
9. 2	Ji'a 4-6	
9. 3	Ji'a 7-8	
9. 4	Ji'a 9 ykn isaa ol	

10. Ulfa ammaa kana dabalatee yeroo meeqa ulfa taatanii beektu (*Ulfa lubbuun hin dhalannee illee dabalatee*)?

Number of pregnancies		
10. 1	1	
10. 2	2-5	
10. 3	6 ykn isaa ol	

11. Yeroo jalqabaaf gaafa deessee umrii waggaa meeqaa turtee?

Age at first birth		**ANSWER**
11.1	Waggaa 15 gadi	1
11.2	Waggaa 16-20	2
11.3	Waggaa 21 ykn isa ol	3
11.4	Primigravida (ulfa taatee hin beektu)	4

12. Dahuumsii kee inni darbee (inni dhiyoo) eessatti geggeefame ture?

Place of delivery of most recent child		
12.1.	Mana jireenyaa keessati maatiin ykn deesistuu aadaatiin	
12.2.	Mana jireenyaa keessati HEF	
12.3.	Dhaabbilee fayyaa keessati ogeesota fayyaatiin	
12.4	Kan biraa (maqaa dhayi)	
12.5	Primigravida (ulfa taate hin beektu)	

13. Maatii keessan keessa kanneen armaan gadii kan qabanuu jiruu?

Conditions	
13.1 Dhukkuba xiixaa (aasmii)	
13.2. Dhukkuba sukaaraa	
13.3. Dhukkuba dhiibaa dhiigaa	
13.4. Dhukkuba onnee	
13.5. dhukkuba biraa (specifiy)	

SECTION C: ACCESSIBILITY AND AVAILABILITY OF THE HEALTH CARE SERVICES

14. Ulfa ammaa kanaaf yeroo meeqa buufata kana ykn dhaabilee fayyaa biro tajaajila dahumsa duraa argachuuf dhaqitanii beektu?

Number of ANC visit	**Answer**
15.1. tokko	1
15.2. lamma	2
17.3. sadii	3
15.4. 4 ykn isaa ol	4

15. Yeroo jalqabaa tajaajila dahumsa duraaf gaara dhaabbata fayyaa dhaqixan ulfa ji'a meeqaa turtan?

Months booked	**Answer**
16.1. Ji'a 4 ykn isa dura	1
16.2. Ji'a 5 - 6	2
16.3. ji'a 7- 8	3
16. Ji'a 4. 9 or isa booda	4

16. Please answer by selecting the appropriate response in each instance

1. SA = strongly agree; 2. A =Agree; 3. U = undecided; 4. D = disagree; 5. SD = strongly disagree						
	1.SA	2.A	3.U	4.D	5.SD	Official use
1. Yeroo hunda hanqinnii hojjetoota fayyaa dhaabilee fayyaa keessa ni jira						
2. Yeroo barbaachisaa ta'eti garaa dhaabbilee fayyaa olaanaa dhaquu nan danda'a (fakkeenyaaf hospitaala dhiyoo jiru)						
3. Yeroon tajaajila dahuumsa duraaf garaa dhaabata fayyaa dhaqe dafaniiti na keessumeessuu (heddu ykn yeroo dheera na hin tursiisan)						
4. Yeroo ulfa koo isa ammaa kana HEF mana koo dhuftee waayee dahumsa na mariyachiiftee (nati haasoftee) jirti						
5. Yeroo tajaajila daumsa duraaf garaa dhaabbata fayyaa deemuu deesistuun aadaa fi fedhiin hojjetootni fayyaa hawaasa yeroo hunda bakka dhaabata fayyaatii argamanii na ni to'atu						
6. Yeroo ulfa koo ammaa kana deesistuun aadaa fi fedhiin hojjetootni fayyaa hawaasa mana koo dhufanii dhimma ulfaa fi dahumsan walqabate irratti na ni mariyachiisuu.						

SECTION D: AWARENESS OF DANGER SIGNS AND EXPRIENCE OF OBSTETRIC COMPLICATION

17. Rakkoowwan fayyaa ciccimoon lubbuu dubartii **ULFA** ajjeessuu (miidhuu) danda'an maal jettuu?

Scoring				
1. M=Mentioned; 2. NM=Not Mentioned; 3. DN= Do not Know				
	1.M	2.NM	3.DN	Official use
1. Dhiigaa karaa qaama hormaataa				
2. Dhiito harkaa/fuulaa, miilaa/ koomee				
3. Ija duraa huurrii maruu				
4. Mata dhukkubbuu ykn Bowwoo cimaa				
5. Garmalee (hedduu) olol jechuu (aluuluu) fi hoqisiisuu				
6. Hurgufuu ykn bubutuu				
7. Of-wallaaluu				
8. Dhukkuba cimaa mudhii gadii ykn garaa				
9. Dhukkubbii dugdaa walirraa hin cinnee				
10. Bishaan gubbee jiguu/ dhangala'uu				
11. Ciniinsuu walirraa hin cinne kan torbaan 37n duraa jalqabe				
12. Daa'imni garaa keessa jiru yoo socho'uu dide, sochiin isaa yoo xiqaate				
13. Sochiin daa'ima garaa keessa jiruu yoo hariifate				
14. Qaamni baayyee gubuu ykn qaama gubaan itti dhagaamuu				
15. Hiridhina dhiigaa ykn laftii namaan maruu				
16. Hafuura baafachuu dadhabuu				
17. Dadhabiin hedduu ykn baayyee itti dhagaa'amuu				
18. Kan biraa (maqaa dhahi)				

18. Rakkoowwan fayyaa ciccimoon lubbuu ***DUBARTII DAHUMSA YKN CINIINSUU IRRA JIRTUU*** ajjeessuu (miidhuu) dandahu maal jettuu?

Scoring				
1. M=Mentioned; 2. NM=Not Mentioned; DN= Do not Know				
	1.M	2.NM	3.DN	Official use
1. Dhiiga garmalee (heddu) karaa qaama hormaata dhangala'u				
2. Mata dhukkubbii ykn bowwoo cimaa/garmalee				
3. Ija dura huurrii maruu				
4. Dhiitoo harkaa/fuulaa, miillaa/ mogolee				
5. Hurgufuu/bububutuu				
6. Of wallaaluu				
7. Garmalee (hedduu) olol jechuu (aluuluu) fi hoqisiisuu				
8. Bishaan gubbee jigee saa'a 24 keessati ciniinsuun hin jalqane yoo tahe				
9. Dhukkuba cimaa mudhii gadii ykn garaa				
10. Dhukkubbii dugdaa walirraa hin cinnee				
12. Daa'imni garaa keessa jiru yoo socho'uu dide, sochiin isaa yoo xiqaate				
13. Sochiin daa'ima garaa keessa jiruu yoo hariifate				
14. Qaamni baayyee gubuu ykn qaama gubaan itti dhagaamuu				
15. Hiridhina dhiigaa ykn laftii namaan maruu				
16. Hafuura baafachuu dadhabuu				
17. Dadhabiin hedduu ykn baayyee itti dhagaa'amuu				
18. Ciniinsuun sa'aa 12 ol yoo irra ture				
19. Daa'imni dhalatee daqiiqa 30 keessatti ofkaltiin ba'uu yoo dide				
20. *Mal presentation/wrong lie of the baby*. Daa'imni karaa malee yoo dhufe				
21.Harkii ykn miillii daa'ima dursee yoo dhufe				
22.Handhuurrii daa'ima morma daa'imaati maramee yoo dhufe				
23. Handhuurrii daa'imaa daa'ima dursee yoo dhufe				
24. Gadameessii haadhaa yoo gadii bahe				
25. Dha'annaa onnee ofii dhaga'uu				
26. Kan biraa(maqaa dahi)				

19. Rakkowwan fayyaa ciccimoon lubbuu ***DUBARTII ULMAACIIFTU (DAHUUMSA HANGA TORBAN JA'A)*** ajjeessuu (miidhuu) danda'an maal jettuu?

Scoring				
1. M=Mentioned; 2. NM=Not Mentioned; DN= Do not Know				
	1.M	2.NM	3. DN	Official use
1. Dhiiga garmalee (hedu) karaa qaama hormaata dhangala'u				
2. Mata dhukkubbii ykn bowwoo cimaa/garmalee				
3. Ija dura huurrii maruu				
4. Dhiitoo harkaa/fuulaa, miillaa/ mogolee				
5. Hurgufuu/bububutuu				
6. Of wallaaluu				
7. Garmalee (hedduu) olol jechuu (aluuluu) fi hoqisiisuu				
8. Qaamni baayyee gubuu ykn qaama gubaan itti dhagaamuu				
9. Dhangala qamaa hormaatan bahu kan fooliin isaa namatti hin toolee				
10. Hafuura baafachuu dadhabuu ykn hafuurrii ciccituu				
11. Dadhabbiin hedduu/ baayee itti dhaga'amuu				
12. Hirdhina dhiigaa ykn laftii namaan maruu				
13. Dhawannaa onnee ofii dhaga'uu				
14. Dhiitaa fi dhukkuba sarbaa				
15. Dhukkuba garaa keessaa				

20. Mallattoowwan dhukkuba cimaa/ balaa yeroo ulfa dubartoota ulfaa irratti muldhachuu danda'an kannen armaan gadii keessa ***YEROO ULFA KEESSAN ISA AMMAA KANAA*** isin muudatee beekaa?

Scoring			
1. Y= YES; 2. N=NO; DR= DO NOT REMEMBER			
	1.Y	2.N	3.DR
1. Dhiigaa karaa qaama hormaataa			
2. Mata dhukkubbii ykn bowwoo cimaa/garmalee			
3. Ija dura huurrii maruu			
4. Dhiitoo harkaa/fuulaa, miillaa/ mogolee			
5. Hurgufuu/bububutuu			
6. Of wallaaluu			
7. Garmalee (hedduu) olol jechuu (aluuluu) fi hoqisiisuu			
8. High fever/feels hot			
9. Dhukkubbii dugdaa walirraa hin cinnee			
10. Bishaan gubbee jiguu/ dhangala'uu			
11. Ciniinsuu walirraa hin cinne kan torbaan 37n duraa jalqabe			
12. Daa'imni garaa keessa jiru yoo socho'uu dide, sochiin isaa yoo xiqaate			
13. Sochiin daa'ima garaa keessa jiruu yoo hariifate			
14. Dhukkuba cimaa mudhii gadii ykn garaa			
15. Hiridhina dhiigaa ykn laftii namaan maruu			
16. Hafuura baafachuu dadhabuu			
17. Dadhabiin hedduu ykn baayyee itti dhagaa'amuu			
18. Kan Biraa (Maqaa dhayi)			

21. Mallattoowwan dhukkuba cimaa/ balaa yeroo ulfa, dahumsa fi ulmaa dubartoota irratti muldhachuu danda'an kannen armaan gadii keessa ***YEROO ULFA FI DAHUUMSA KEESSAN ISA DARBEE*** isin muudatee beekaa?

Scoring			
1. Y = YES; 2. N= NO; 2.DR=DO NOT REMEMBER			
	1.Y	2.N	3. DR
1. Dhiiga garmalee (heddu) karaa qaama hormaata dhangala'u			
2. Mata dhukkubbii ykn bowwoo cimaa/garmalee			
3. Ija dura huurrii maruu			
4. Dhiitoo harkaa/fuulaa, miillaa/ mogolee			
5. Hurgufuu/bububutuu			
6. Of wallaaluu			
7. Garmalee (hedduu) olol jechuu (aluuluu) fi hoqisiisuu			
8. Bishaan gubbee jigee saa'a 24 keessati ciniinsuun hin jalqane yoo tahe			
9. Dhukkuba cimaa mudhii gadii ykn garaa			
10. Dhukkubbii dugdaa walirraa hin cinnee			
12. Daa'imni garaa keessa jiru yoo socho'uu dide, sochiin isaa yoo xiqaate			
13. Sochiin daa'ima garaa keessa jiruu yoo hariifate			
14. Qaamni baayyee gubuu ykn qaama gubaan itti dhagaamuu			
15. Hiridhina dhiigaa ykn laftii namaan maruu			
16. Hafuura baafachuu dadhabuu			
17. Dadhabiin hedduu ykn baayyee itti dhagaa'amuu			
18. Ciniinsuun sa'aa 12 ol yoo irra ture			
19. Daa'imni dhalatee daqiiqa 30 keessatti ofkaltiin ba'uu yoo dide			
20. *Mal presentation/wrong lie of the baby*. Daa'imni karaa malee yoo dhufe			
21.Harkii ykn miillii daa'ima dursee yoo dhufe			
22.Handhuurrii daa'ima morma daa'imaati maramee yoo dhufe			
23. Handhuurrii daa'imaa daa'ima dursee yoo dhufe			
24. Gadameessii haadhaa yoo gadii bahe			
25. Dha'annaa onnee ofii dhaga'uu			
26. Other (Specify)Kan biroo(maqaa dahi)			

22. Dubartoota (maatii, olla ykn Hiriyyaa keessan keessaa) mallattoowwan dhukkuba ciccimoo/balaa yeroo ulfa, dahumsa fi dahumsa booda (ulmaa) du'an dhageessanii beektuu?

Scoring			
1. Y = YES; 2. N= NO; 2.DR = DO NOT REMEMBER			
	1.Y	2.N	3. DR
1. Dhiiga garmalee (hedu) karaa qaama hormaata dhangala'u			
2. Mata dhukkubbii ykn bowwoo cimaa/garmalee			
3. Ija dura huurrii maruu			
4. Dhiitoo harkaa/fuulaa, miillaa/ mogolee			
5. Hurgufuu/bububutuu			
6. Of wallaaluu			
7. Garmalee (hedduu) olol jechuu (aluuluu) fi hoqisiisuu			
8. Bishaan gubbee jigee saa'a 24 keessatti ciniinsuun hin jalqane yoo tahe			
9. Dhukkuba cimaa mudhii gadii ykn garaa			
10. Dhukkubbii dugdaa walirraa hin cinnee			
12. Daa'imni garaa keessa jiru yoo socho'uu dide, sochiin isaa yoo xiqaate			
13. Sochiin daa'ima garaa keessa jiruu yoo hariifate			
14. Qaamni baayyee gubuu ykn qaama gubaan itti dhagaamuu			
15. Hiridhina dhiigaa ykn laftii namaan maruu			
16. Hafuura baafachuu dadhabuu			
17. Dadhabiin hedduu ykn baayyee itti dhagaa'amuu			
18. Ciniinsuun sa'aa 12 ol yoo irra ture			
19. Daa'imni dhalatee daqiiqa 30 keessatti ofkaltiin ba'uu yoo dide			
20. *Mal presentation/wrong lie of the baby*. Daa'imni karaa malee yoo dhufe			
21.Harkii ykn miillii daa'ima dursee yoo dhufe			
22.Handhuurrii daa'ima morma daa'imaati maramee yoo dhufe			
23. Handhuurrii daa'imaa daa'ima dursee yoo dhufe			
24. Gadameessii haadhaa yoo gadii bahe			
25. Dha'annaa onnee ofii dhaga'uu			
26. Other (Specify)Kan biroo(maqaa dahi)			

HIRMAANNAA KEESSANIIF ULFAADHAA.

Annexure 2: Sample letter for permission to conduct a study, letter for respondents and informed consent

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

To: ------ Health centre /Hospital
East wollega, Ethiopia
Address: Tel:
Fax:
P.O. Box:
Email:

I am currently registered for a master's degree in the Department of **Health Studies** in the College of **Human Sciences** at the **University of South Africa**. The title of this research is: "Awareness of danger signs of obstetric complications among pregnant women antenatal care in East Wollega, Ethiopia".

The purpose of this study is to assess awareness of danger signs of obstetric complications among pregnant women attending antenatal care (ANC) in four health care facilities of East Wollega, Ethiopia.

I am requesting permission to collect data from pregnant women attending antenatal care services in the selected health care facilities of east Wollega zone (Nekemte Hospital, Nekemte health care centre, Uke Health care centre, and Galo health care centre).

Structured questionnaire will be used to collect the data from the respondents. Data will be collected by trained field workers on behalf of the researcher. Written consent will be obtained from the respondents. Included please find a letter to the respondents and a proposed consent.

I also request any available guideline on ethical requirements for conducting a research at the 4 health care facilities mentioned above. A research report will be available to your office after completion of the study.

Thank you for your time and attention directed to this request. Any suggestion will be appreciated.

With regards

Abera Workneh WANBORU
43290078

Annexure 4: Letter to participants and informed consent

PARTICIPATION IN RESEACH STUDY

Dear Respondent

I am a master's student in the Department of **Health Studies** in the College of **Human Sciences** at the **University of South Africa**.

You are invited to voluntary participate in a research project entitled ""awareness of danger signs of obstetric complications among pregnant women attending antenatal care in East Wollega, Ethiopia".

The purpose of this study is "to assess awareness of danger signs of obstetric complications among pregnant women attending antenatal care (ANC) in four health care facilities of East Wollega, Ethiopia".

I am collecting data from all pregnant women coming to this health care facility to attend antenatal care services. I am requesting you to participate in a 40 minutes data collection. The direct benefit to you of participating in this study is that you will have the opportunity to verbalise your views on information you get from the Antenatal care sessions.

Participation in this study is entirely on voluntary basis and you can chose not to answer any individual questions or all of the questions. You may end the participation in the data collection at any time if you wish so. Whatever information you provide will be kept strictly confidential and will not be shown to other persons. Your name will be not taken and recorded in this paper; and known to no one. No identifying information will be disclosed in the publication of the research finding.

However, we hope that you will participate fully in this assessment since your views are very important. I want to stress that an honest reflection of your views, without any fear of victimisation, will be appreciated.

If you are willing to participate, please sign the attached consent form.

Thank you for your assistance.

CONSENT FORM

In signing this document, I voluntarily agree to complete a questionnaire which will be completed by field workers on my behalf. I understand the purpose of the study and that my identity and all responses I give will be kept completely confidential. I retain the right to withdraw from the study at any time, without any fear of victimisation

SIGNATURE: PARTICIPANT……

RESEARCHER……

DATE: ……