

**RELATIONSHIP OF ANTENATAL CARE WITH THE PREVENTION OF
MATERNAL MORTALITY AMONG PREGNANT WOMEN IN BAUCHI
STATE**

BY

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**DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA**

July, 2014

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**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,
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DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION**

July, 2014

DECLARATION

I declare that the work in this thesis entitled “Relationship of Antenatal Care with the Prevention of Maternal Mortality among Pregnant Women in Bauchi state”. has been performed by me in the Department of Physical and health Education, Ahmadu Bello University, Zaria under the supervision of Professor (Mrs) T.N. Ogwu and Professor. F.R. Haruna. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any University

Name of Student

Signature

Date.

CERTIFICATION

This thesis entitled “RELATIONSHIP OF ANTENATAL CARE WITH THE PREVENTION OF MATERNAL MORTALITY AMONG PREGNANT WOMEN IN BAUCHI STATE” by MOHAMMED YUSUF meets the regulations governing the award of the degree of masters of Education (Health Education) of Ahmadu Bello University Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This research work is dedicated to my late mother Mallama Fatima Abdullahi may Allah reward her with Jannatul Firdausi. Amin.

ACKNOWLEDGEMENT

The researcher wishes to express his sincere gratitude to Almighty God for given him this opportunity to carry out this research work. He is sincerely grateful to his accommodating supervisors Prof (Mrs) T.N. OGWU and Prof. F.R.Haruna who patiently read this work several times and gave constructive critiques and suggestion to see me through the alley ways of this research work in spite of their tight schedules.

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ABSTRACT

The purpose of this study was to examine the relationship of antenatal care with the prevention of maternal mortality among pregnant women in Bauchi state. An ex-post facto research design was used to study 308 subjects drawn from six local government areas in Bauchi state. The subjects were drawn through stratified random sampling techniques. A close ended questionnaire was used to obtain responses from the subjects. Data collected for this study were analyzed using descriptive statistics of mean and standard deviation and inferential statistics of Pearson product moment correlation analysis, 0.05 level of significance was used for all tests of significance. Four research questions were asked and four hypotheses were tested at 0.05 level of significance. Findings showed that, significance relationship existed between level of awareness and the prevention of maternal mortality among pregnant women in Bauchi state; Significant relationship existed between level of utilization of antenatal care services among pregnant women and prevention of maternal mortality in Bauchi state; Significant relationship existed between availability of equipment and facilities of antenatal care services and the prevention of maternal mortality in Bauchi state and Significant relationship existed between the proficiency of antenatal care personnel and prevention of maternal mortality among pregnant women in Bauchi state. Based on the findings above, the following recommendations were made: Health educators, nurses and other health professionals should regularly create awareness on antenatal care among pregnant women since it prevent maternal mortality. Pregnant women should be encouraged to utilize antenatal care services regularly in order to prevent maternal mortality.

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ABBREVIATIONS

ANC	Antenatal care
APH	Antepartum Hemorrhage
BMI	Body Mass Index
CDC	Centre for Diseases Contract
DIC	Disseminated Intravascular Coagulation
ELIS	Enzyme Link Immune Serum- Assay
MM	Maternal Mortality
MMR	Maternal Mortality Ratio
NAI	Nucleic Acid Implication
PID	Pelvic Inflammatory Diseases
RVF	Recto Vaginal Fistula
STI	Sexually Transmitted Infections
UNCEF	United Nation Children Fund
UNFPA	United Nation Population Fund
VDRL	Venereal Diseases Research Laboratory
VVF	Visico Vaginal Fistula
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

Antenatal care is concerned with health of the mother and foetus. The purpose of antenatal care is to encourage good health in every expectant and lactating mother, to enable her to have normal delivery and a healthy baby and to teach the art of childcare. Antenatal care (ANC) refers to the care that is given to the pregnant women from the time that conception is confirmed until the beginning of labour (Fraser & Cooper, 2003). Antenatal care is the key component of safe motherhood which lies as the foundation for basic health services, equity, emotional and psychological support, even though the direct relationship between antenatal care and reduction of maternal mortality remains a subject of much debate (Federal Ministry Of Health, 2008).

Lucas and Gilles (2004) stressed that, previously, a major feature of maternal care was the assessment of the risk of each pregnancy based on the woman's previous obstetric history and health status. Special services were offered to high risk pregnancies including closer supervision during delivery. Antenatal care provides the opportunity of monitoring the progress of pregnancy so that any deviation from normal can be detected at an early stage before serious complication occur. The woman is encourage to note and describe any symptom or sign that she has observed since her last visit to the clinic and she can be reassured when those signs and symptoms do not signify any serious abnormality. Ministry of Health (2008) shows that, over seventy percent (70%) of women worldwide have at least one antenatal care (ANC) visit with a skilled attendant .However, this percentage varies by region.

- In industrialized countries ninety eight percent (98%) of woman have at least one ANC visit.

- In developing countries, the percentage drop to approximately sixty eight percent (68%)
- South East Asia has the lowest ANC attendance rate, with fifty four percent (54%) of women attending at least one ANC visit.

Lucas and Gilles (2004) asserted that, maternal mortality is the death of a woman while pregnant or within 42days of termination of pregnancy, regardless of the site or duration of the pregnancy, from any cause related to aggravated by the pregnancy or its management. While WHO(2007) added to this that is not from accidental or incidental causes.

Maternal mortality is sub-divided into direct and indirect obstetric deaths. Direct obstetric death result from obstetric complication of pregnancy,labour or the postpartum period .They usually due to one of the five major causes – hemorrhage(usually occurring post-partum) sepsis, eclampsia, obstructed labour and complication of unsafe abortion as well as interventions, omissions, incorrect treatment or event resulting from any of these (WHO, 2008).

WHO (2008) further stressed that, indirect obstetric deaths result from previously existing diseases or from diseases arising during pregnancy (but without direct obstetric causes), which are aggravated by the physiological effect Of pregnancy; examples of such diseases include malaria, anaemia, HIV/AIDS and cardiovascular diseases.

Generally, there is a distinction between a direct maternal death that is as the result of complication of pregnancy, delivery or their management, and an indirect maternal death such as pregnancy related death in a patient with a pre-existing or newly developed health problem. Other fatalities during but unrelated to a pregnancy are termed as accidental, incidental or non-obstetrical maternal death (WHO,2008).United Nation Population Fund (2007) stressed that, the major causes of maternal mortality or death are infection, variants of

gestational hypertension including pre-eclampsia, obstetric haemorrhage, ectopic pregnancy, puerperal sepsis amniotic fluid embolism, uterine rupture and complication of unsafe abortion or unsanitary abortions. Lesser known causes of maternal death include renal failure, cardiac failure and hyperemesis gravidarum. Nigeria has the second highest maternal death in the world – 52,000 Nigerian women die every year. Unsafe practices of childbirth cause an average death of 114 Nigerian women. This means that, every 10 minutes one Nigerian woman dies due to childbirth and pregnancy related causes (WHO, 2008). The rate was highly significant number of women of child-bearing age who does not survive pregnancy and child birth or immediately within six weeks of delivery. Only 43.8% of women of Bauchi state received antenatal care during pregnancy, while 14.6% give birth in health facility with trained personnel, such as doctors, nurses and midwives attending to only about one third of the deliveries (UNFPA, 2007). The result of the study further explained that, the increase in maternal mortality rate in Bauchi state is attributed to weak and poor primary health care system in the state, lack of skilled and motivated staff as well as in adequate drugs and equipment in health centres (UNFPA,2007). It is on this basis that, the researcher intended to study the relationship of antenatal care with the prevention of maternal mortality in Bauchi state

1.2 Statement of the Problem

Antenatal care refers to the care that is given to the woman from the time that conception is confirmed until the beginning of labour (Myles, 2003). ANC provides the opportunity of monitoring the progress of the pregnancy so that any deviations from normal can be detected at early stage before serious complications occur (Lucas & Gilles, 2004).

WHO (2010) reported that, more than 600,000 women die due to child birth or pregnancy related complications around the world annually. Nigeria is solely responsible for close to 10% of that figure. Africa has the highest maternal mortality ratio (MMR) with an

estimated average of 800 deaths per 100,000 births. The estimated average MMR in Nigeria, however, is 1,000 for every 100,000 births, but this figure varies according to the region of the country. Maternal mortality ratio is much higher in the North Eastern region of Nigeria, accounting for 75% of the country's maternal deaths compared to South East and South West region (WHO, UNICEF& UNFPA 2008).

United states Agency for international development (2009) indicates that, most of the victims of maternal deaths are women between the ages of 15 and 45. After India, Nigeria has the second highest maternal death in the world – 52,000 Nigerian women die every year. Unsafe practices of childbirth cause an average death of 114 Nigerian women. This means that, every 10 minutes one Nigerian woman dies due to childbirth and pregnancy related causes. UNFPA (2007) reported that, in Bauchi state alone studies was conducted which revealed that, maternal mortality rate worsened from 1350 per 100,000 of live births in 2003 to 1380 per 100,000 in 2006. However, some pregnant women in the area under review are not attending antenatal care regularly and failure to attend antenatal care can lead to anaemia in pregnancy haemorrhage, sepsis, abortion, obstructed labour among others and hence, death can occur. It is against this background that, the researcher became motivated to study the relationship of antenatal care with the prevention of maternal mortality among pregnant women in Bauchi state.

1.3 Research Questions

This study is conducted to answer the following specific questions:

1. Are pregnant women attending maternity clinics aware of the relationship of antenatal care with the prevention of maternal mortality in Bauchi state?
2. Do pregnant women attending maternity clinics utilize the services of antenatal care for the prevention of maternal mortality in Bauchi state?

3. Do the pregnant women of Bauchi state utilize the available equipment and facilities of antenatal care services for the prevention of maternal mortality?
4. Are there adequate/ proficient personnel in providing antenatal care services for the prevention of maternal mortality in Bauchi state?

1.4 Purpose of the Study

This study investigates the relationship of antenatal care with the prevention of maternal mortality among pregnant women in Bauchi State. Specifically, the study sought to:

1. Find out the level of awareness of pregnant women on the relationship of antenatal care attended with the prevention of maternal mortality in Bauchi State.
2. Find out if pregnant women of Bauchi state utilize antenatal care services for the prevention of maternal mortality.
3. Find out the availability of equipment/facilities of antenatal care services for the prevention of maternal mortality in Bauchi State.
4. Find out the proficiency of ANC personnel among pregnant women for the prevention of maternal mortality in Bauchi State.

1.5 Basic Assumptions

This study is conducted to make the following assumptions:

1. If pregnant women of Bauchi state are aware of the benefits of antenatal care services, maternal mortality will be prevented.
2. If pregnant women significantly utilized services of antenatal care it will help in the prevention of maternal mortality in Bauchi state
3. If antenatal care equipment and facilities are adequately provided will enhance prevention of maternal mortality in Bauchi state.
4. Proficient antenatal care personnel helps in the prevention of maternal mortality in Bauchi state.

1.6 Hypotheses

On the basis of the research questions and assumptions of this study, the following hypotheses were formulated:

Major hypothesis

There is no significant relationship between the level of awareness, utilization, equipment and facilities of antenatal care, proficiency of antenatal care personnel and prevention of maternal mortality among pregnant women in Bauchi state.

Sub-Hypotheses

1. There is no significant relationship between level of awareness of pregnant women attending antenatal care clinics and the prevention of maternal mortality in Bauchi state.
2. There is no significant relationship between level of utilization of antenatal care services and prevention of maternal mortality in Bauchi state.
3. There is no significant relationship between availability of equipment and facilities of antenatal care services and the prevention of maternal mortality among pregnant women in Bauchi state.
4. There is no significant relationship between the proficiency of antenatal care personnel and prevention of maternal mortality among pregnant women in Bauchi state.

1.7 Significance of the Study

The followings are the significances of this study:

- a) The findings of this study will create awareness among pregnant women of Bauchi State on the importance of antenatal care for the prevention of maternal mortality.

- b) The results of this study will also enhance the level of utilization of antenatal care services by the pregnant women of Bauchi state.
- c) The results will be useful to the Bauchi State Ministry of Health and Primary Health Care Service developmental agencies in designing health education programme on antenatal care services and prevention of maternal mortality among pregnant women in Bauchi state.
- d) It will serve as a reference material for further research on Antenatal Care and Prevention of Maternal Mortality among pregnant women in Bauchi State and Nigeria at a large.
- e) It will also contribute to the existing knowledge in the area of Antenatal care services and the Prevention of maternal mortality among pregnant women.

1.8 Delimitation of the Study

This study is delimited to relationship of antenatal care with the prevention of maternal mortality among pregnant women in Bauchi state. It is further delimited to 6 maternity clinics selected across the senatorial district of Bauchi state.

1.9 Limitation of the Study

The limitation of this study was that, the level of education of some of the respondents was a barrier in their ability to read and understand the context of the questionnaire. However, the researcher translated the various sections of the questionnaires in Hausa.

CHAPTER TWO

Review of Related Literature

2.0 Introduction

This chapter discusses the review of related literature under the following heading:-

2.1 Conceptual Framework

2.2 Overview of Maternal Mortality

2.3 Prevention of Maternal Mortality

2.4 Concept of Antenatal Care Services

2.5 Level of awareness of antenatal care

2.6 Utilization of Antenatal Care

2.7 Proficiency of Antenatal Care Personnel

2.8 Summary of the review of related literature and uniqueness of the study

2.1 Conceptual Framework

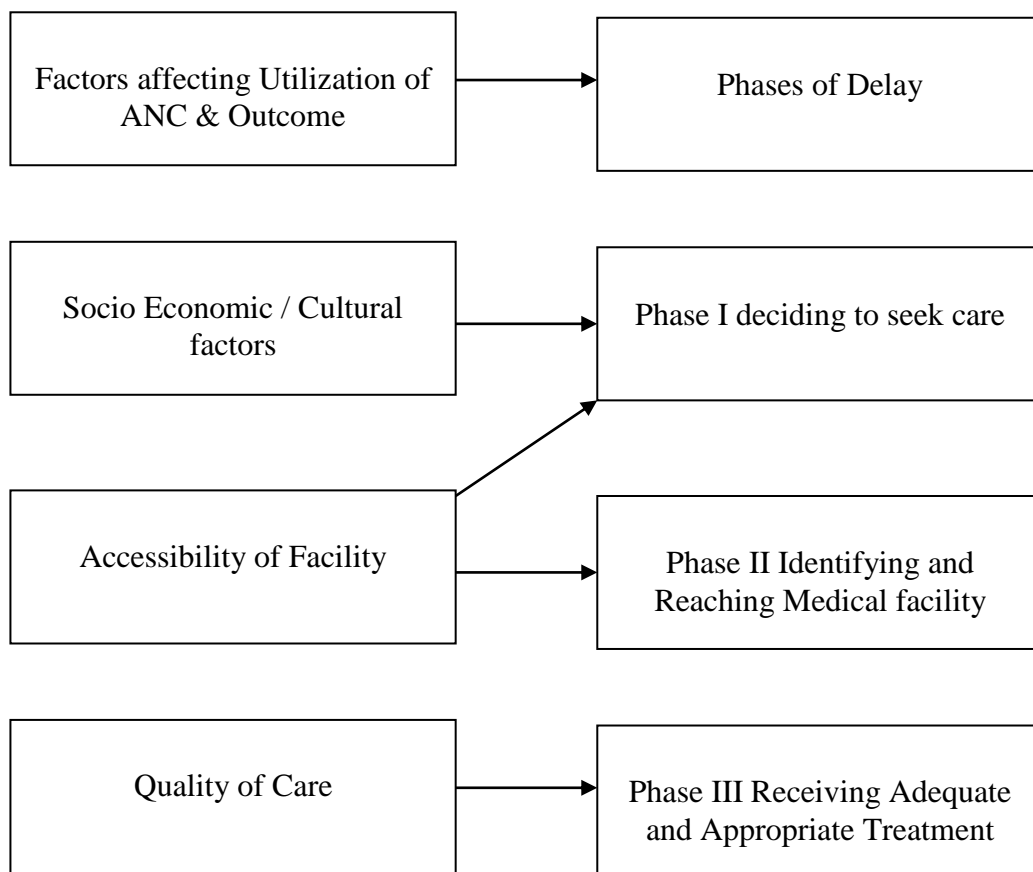
This study has been conceptualized on the three delay model. The model was proposed by McCarthy and Maine in 1992 (McCarthy & Maine 1992). This framework is still widely use today. The model which helps in exploring process and cause of maternal mortality or death. They proposed that there are three delays which occur during the care seeking process from the beginning of the maternal complication to receiving the appropriate treatment. These three delays are:-

- (a) Delay in deciding to seek care
- (b) Delay in reaching a health facility
- (c) Delay in receiving adequate appropriate care in health facility.

The first delay happens at household level either because women or family members failed to identify the danger signs of complications or delay in seeking permission to take

women to hospital or in arranging money, transport or other logistics problems. The second delay happens in reaching health facility in most cases when it is too far. In rural areas, delays due to distance and unavailability of transportation are common, people may have to travel long distance over difficult territory to reach the few medical facilities that exist and it may take long time. During this time the patient's conditions can deteriorate making the condition more difficult to treat on arrival to the health facility. The third delay occur in receiving appropriate treatment after reaching health facility and that usually happens from shortages of staff, essential equipment, supplies, drugs and blood as well as inadequate management. This model uses quantitative data collection methods like surveys.

Figure I the three delay Model



SOURCE: Thanddeus& Maine, 1994

2.2 Overview of Maternal Mortality

According to WHO (2008) “A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from incidental causes”. Generally, there is a distinction between a *direct maternal death*, that is the result of complication of pregnancy, delivery or their management, and an *indirect maternal death*, that is a pregnancy related death in a patient with a pre-existing or newly develop health problem. Goodrum (2001) stressed that, approximately 500,000 to 1 million women die each year worldwide as a consequence of pregnancy complications. The vast majority of these deaths occur in developing countries. According to WHO (2008) 55 % of maternal death occur in Asia, 40 % occur in Africa and only 1 % occur in developed countries. The available statistical data most likely underestimate the actual numbers of death because of underreporting and misclassification.

In the same vein UNPFA (2007) further explained that, in 2000, the estimated number of maternal death worldwide was 529,000, 95% of these deaths occurred in Africa and Asia. While women in developed countries have only a 1-in-2, 800 chances of dying in childbirth- and a 1-in-8,700 chance in some countries – women in Africa have a 1-in-20 chance. In several countries the lifetime risk is greater than 1 in 10 for every woman who dies from obstetric complication; approximately 30 more suffer injuries, infections and disabilities. In 1999, for example WHO estimated that, over 2 million women living in developing countries remain untreated for obstetric fistula, a devastating injury of childbirth.

According to Okonofua (2008) globally, around 80 percent of maternal death are due to obstetric complication; mainly haemorrhage, sepsis, unsafe abortion, pre-eclampsia and eclampsia and prolonged obstructed labour. Complication of unsafe abortion account for 13% of maternal deaths world wide and 19% of maternal deaths in South America.

Myles (2003) asserted that, over half a million women die each year due to complications during pregnancy and childbirth. The vast majority of these deaths are preventable. At the millennium summit in 2000, states resolved to reduce maternal mortality by 3 quarters by the year 2015. This commitment is encapsulated in the Millennium Development Goals, which drive from the millennium summit commitments and which have come to play a defining role in international development efforts. Goal 5 is a commitment to improve maternal health.

Maternal mortality is a basic indicator of inequalities in the health care of women of reproductive age among countries and among regions within a country. The national pregnancy mortality surveillance system was established in 1988 by the centre for disease control and has been a valuable source of information on maternal mortality statistics in United States. The epidemiologic data it provides have revealed disturbing disparities between ethnic groups (CDC, 2004). In the United States, African, American women generally have a 4 times greater risk than white women of dying as a result of pregnancy. This disparity applies to every cause of maternal mortality. Current race specific mortality ratios are 5.7 per 100,000 live births for white women and 18.6 per 100,000 live births for African women.

Dafallah, El-agib and Bushra (2003) conducted a study on maternal mortality in a teaching hospital in Sudan. The purpose of the study was to review the maternal mortality rate and its main causes. It also attempt to draw broad lines for the prevention of maternal deaths. A retrospective study was carried out at the Madani teaching hospital, Madani city, Sudan. Case notes were reviewed for all 877 woman died during the period 1985-1999. Results showed that, out of the total number of deliveries in that period (N = 44.603), 877 women died with a rate of 1,966 per 100,000.

Hill, Abouzahr and Tessa (2001) carried out a survey on estimates of maternal mortality for 1995 among women of child bearing age worldwide. The objectives of the study

was to present estimates of maternal mortality in 188 countries and territories for 1995 using methodologies that attempt to improve comparability. Results indicated that, a global estimate of 515, 000 maternal mortality in 1995, with a worldwide maternal mortality ratio (MMR) of 397 per 100,000 live births. The difference by region varies greatly, with over half (273,000 maternal deaths) occurring in Africa (MM ratio > 1000 per 100,000), compared with a total of only 2000 maternal death in Europe (MM ratio: 28 per 100,000). Lower and upper uncertainty bounds were also estimated, on basis of which the global MM ratio was likely to be less than 234 or more than 635 per 100,000 live births.

Igborase, Isah and Igbekoyi (2009) noted that, the neglected tragedy of maternal mortality has been described as health scandal of our time. For women of reproductive age, complications of pregnancy and childbirth are leading cause of maternal mortality, diseases and disability, accounting for at least 18% of the global burden of disease in this age group. WHO and UNICEF (2008) estimated that, there are well over 600,000 maternal death worldwide annually, with 99% of these maternal deaths occurring in the developing countries. Globally, one woman dies every minute from complication related to childbirth. For every maternal death, 15-20 other women suffer disabilities that significantly jeopardize their reproductive health and socio-economic status. Estimated as high as 100-200 per 100,000 live births are commonly reported in Nigeria. It is estimated that 75% of maternal deaths are direct obstetric deaths due to obstetric complications such as heamorrhage, sepsis, hypertensive disorders, unsafe abortions and obstructed labour. Other non-obstetric causes include anaemia, sickle cell disease and cardiac diseases. Non-medical factors include socio-economic factors (illiteracy, poverty, ignorance, poor nutrition and poor use of available maternal service.

The average maternal mortality rates in developed countries are between 10-15/100,000 live births while developing countries record rates 100- 200 times this number

(Rosenfield, 2007). The problem of maternal deaths is worst in sub-Saharan Africa with the maternal mortality rates there being higher than anywhere else in the world (WHO, 2009). The situation in Nigeria is especially grave as we still record maternal mortality rates in the order of 800-1,000 per 100,000 live births (N.P.C. 2003) and thus rank among the nations with the highest number of maternal deaths (WHO, 2009). Nigeria makes up only 1.7% of the total world population, but accounts for about 10% of the global estimate for maternal mortality (Grant, 2010)

Maternal mortality, also known as maternal death, continues to be the cause of death among women of reproductive age in many countries and remains a serious public health issue especially in developing countries (WHO, 2007). Globally, the estimate number of maternal death worldwide in 2005 was 536,000 up from 526,000 in 2000. According to WHO Factsheet (2008), 1500 women die from pregnancy or pregnancy related complications every day. Most of these deaths in developing countries, and most are avoidable, of all the Health Statistics compiled by the World Health Organisation (2008), the largest discrepancy between developed and developing countries occurred in maternal mortality.

Ujah et al, (2005) noted that while 25percent of females of reproductive age lived in developed countries, they contributed only one percent to maternal deaths worldwide. A total of 99 percent of all maternal deaths occur in developing countries. More than half of these deaths occur in sub-sahara Africa and one third in Asia. The maternal mortality ratio in developing countries is 450 maternal deaths per 100, 000 live births versus nine in developed countries. 15 countries have maternal mortality ratio of at least 1000 per 100,000 live births, of which all but Afghanistan and India are in the sub-sahara Africa: Afghanistan, Angola, Burundi, Cameroon, chad, the democratic republic of Congo, Guinea-Bissau, India, Liberia, Malawi, Niger, Nigeria, Rwanda, Sierra Leone, and Somalia (WHO, 2008).

Mairiga et al, (2008) expressed the view that the world's maternal mortality ratio (the number of deaths per 100, 000 live births) is declining too slow meet the millennium development goal (MDG) five target, which aimed to reduce the number of women who die in pregnancy and child birth by three quarters by the year 2015. While an annual decline of 5.5 percent in maternal mortality ratio between 1990 and 2015 is required to achieve MDG 5, figures released by WHO, UNIEF and UNFP and the World bank (2007) shows an annual decline of less than one percent gains in reducing maternal mortality have been modest overall.

2.3 Prevention of Maternal Mortality

The reduction of maternal mortality remains one of the most important social and developmental challenges currently facing the African continent. Available evidence suggests that of the eight millennium development goals, the fourth goal, aimed at reducing maternal mortality rate by 75% by 2015, is the one most likely to be attained in many African countries such as Nigeria (Okonofua, 2008). The World Health Organisation (2008) identified four main interventions as critical in efforts to reduce maternal mortality in developing countries. These are family planning, antenatal care, skilled birth attendance and obstetric emergency care. It is now recognised that countries with high rates of maternal mortality have low uptake of these four essential interventions. By contrast, countries that have successfully reduced maternal mortality consistently have much higher uptake of these interventions. As an example, Sweden with one of the lowest maternal mortality rates in the world has a contraceptive prevalence rate of 78%, antenatal care attendance by pregnant women of 98% skilled birth attendance of nearly 100% and almost universal access to emergency obstetrics care. In comparison, Nigeria the second highest maternal mortality rate in the world has a contraceptive prevalence of only 8%, antenatal attendance of 60%, skilled birth attendance of 30% and very poor access by pregnant women to emergency obstetrics care (Okonofua, 2008).

While increased access to evidence based interventions is a key strategy for promoting safe motherhood, the quality of services received is also important and critical. It is not enough for women to receive antenatal, delivery and emergency obstetrics care, the quality of care they receive at these points is also an essential determinant of their survival. Thus, safe motherhood initiatives must focus on access and quality of care as component dyads in effort to reduce maternal mortality in Africa in the coming years. Several socio-economic factors have been recognised as being associated with low access and poor quality of maternity services in African countries. These include poverty, illiteracy, ignorance, harmful traditional practices religious believes, socio-economics disempowerment of women and poor health infrastructures in these countries (Okonofua, 2008).

WHO (2010) explained that, most maternal deaths from haemorrhage occur in hospital, we can potentially prevent many of them by improving our early recognition of and response to haemorrhage. Hemodynamic compensatory mechanisms, tachycardia and hypotension may not be evident in a pregnant woman until severe decompensation has occurred. The causes of death due to haemorrhage are multi-factorial, and prevention requires a multi-disciplinary response. Underestimation of blood loss and reliance on symptoms and hemodynamic changes may delay fluid resuscitation and transfusion. Hospital systems that support a rapid and coordinated response to extreme blood loss can limit maternal morbidity and mortality.

2.4 Concept of Antenatal Care

Antenatal care is the care a woman receives throughout her pregnancy in order to ensure that women and newborns survive pregnancy and childbirth. A healthy diet and lifestyle during pregnancy is important for the development of a healthy baby and may have long-term beneficial effects on the health of the child.

Antenatal care (ANC) among pregnant women is one of the important factors in reducing maternal morbidity and mortality. Unfortunately, many women in developing countries do not receive such care. Reports from neighboring countries show that a high utilization rate of the ANC service results in lowering the risk of maternal mortality. For example, in south East Asia (Yang Ye. et al; 2010).

Fraser and Cooper (2003) defined antenatal care as the care giving to a pregnant woman from the time that conception is confirmed until the beginning of labour. Antenatal care is a key component of safe motherhood which lies on a foundation of basic services, equity, emotional and psychological supports; even through its direct relationship to the reduction of maternal mortality remains a subject of much debate (Federal Ministry of Health, 2008). Lucas and Gilles (2004) further stressed that, a major feature of maternal care was the assessment of the risk of each pregnancy base on the woman's previous obstetric history and health status. Special services were offered to high risk pregnancies including closer supervision during delivery. Antenatal care also provides the opportunity of monitoring the progress of pregnancy so that any deviation from normal can be detected at an early stage before serious complication occur.

The effect of antenatal care on maternal mortality is clear. However, there is broad agreement that antenatal care interventions can lead to improved maternal and newborn health, which can also impact on the survival and health of the infant. Additionally, the ANC visit, which many women in sub-Saharan Africa attend, is an opportunity to reach pregnant women with messages and interventions. A global evaluation of antenatal care has resulted in the recommendation to deliver antenatal services in 4 focused visits (Focused antenatal care; FANC), one within the first trimester and 3 after quickening, and this schedule is now endorsed by WHO(2010). Proven effective antenatal interventions include serologic screening for syphilis, provision of malaria prevention, anti-tetanus immunization, and prevention of mother-to-child transmission of HIV. To fully benefit from these interventions, it is important that women start visiting the antenatal clinic (ANC) early in pregnancy (Ademola, et,al; 2011).

The World Health Organisation (2010) initiated focused antenatal care in order to improve the care given to pregnant women. Initially, frequent routine visits were the norm and women were classified by risk category to determine their chances of complications. The level of care disregards these categories and focuses on an updated approach to antenatal care over number of visits. Each focused antenatal care visit includes interventions that are appropriate to the woman's stage of pregnancy, and which address her overall health and preparation for birth and care of the new born. This goal directed interventions are important because pregnancy is one of the most important periods in the life of a woman, a family and the society at large.

Antenatal care services were provided daily in all intervention clinics. However, the introduction of focused antenatal care was not accompanied with a reorganisation of antenatal care services. Service delivery continues to follow the assembly line format where clients have to go through several access points during a single visit including: reception for cards to

be numbered and recorded, weighing, health education, consulting room (for history taking, consultation and physical examination). Depending on the outcome of consultation and number of visits, clients may be sent to the laboratory or for counselling or pharmacy to collect medications like iron, folic acid(Ademola,et,al; 2011).

The sequencing of services varies across clinics, but on average, clients make a minimum of five contacts on a single visit. Focused antenatal care however, expects that a woman will receive individualized care primarily from one provider, consistently over the four visits. It was introduced in a context in which many critical antenatal care services were not being widely offered, such as monitoring the progress of a pregnancy, identifying complications, referring mothers for specialized care at an appropriate time, and promoting postpartum family planning. The function of antenatal care in preventing problems for mothers and newborns depends on an operational continuum of care with accessible, high quality care before and during pregnancy, childbirth and the postnatal period. It also depends on the support available to help pregnant women reach services, particularly when complications occur. An important element in this continuum of care is effective antenatal care. The goal of focused antenatal care is to prepare for birth and parenthood as well as prevent, detect, alleviate, or manage the three types of health problems during pregnancy that affect mother and newborns such as: complications of pregnancy itself, pre-existing conditions that worsen during pregnancy and effects of unhealthy lifestyles(Ademola, et al; 2011).

2.5 Level of awareness of Antenatal Care (ANC)

Antenatal care provides an opportunity to educate the pregnant woman about pregnancy and childbirth. Under usage of antenatal care has been repeatedly associated with adverse maternal outcomes. However there is controversy about the impact of antenatal education on pregnancy outcome. Antenatal education programs are a very important component of

antenatal care worldwide since it makes women contribute to the maximum for a better pregnancy outcome and care of the neonate. Antenatal care provides advice, reassurance, education on nutrition during pregnancy, danger signs of pregnancy, screening programs for HIV and other sexually transmitted diseases (STIs) and it detects the problems that make the pregnancy a high risk one(WHO, 2004)

Begum and Bhuiyan (2009) carried out a study on antenatal care counseling pamphlet and emergency obstetric care in Dhaka city. The objectives of the study was to find out the effect of using antenatal care counseling pamphlet by the Maternal and Child Health(MCH) Service providers on the quality of their antenatal care delivery and change in awareness of pregnant mother's on emergency obstetric case (EOC). A prospective longitudinal study with experimental design was undertaken among the MCH providers and antenatal mothers in 2 zones of Dhaka, Bangladesh, between July, 1997 and 1998. Results showed that, service providers (n-307) who used ANC pamphlet discussed various obstetric emergencies more frequently ($P < 0.05$ to $P \leq 0.001$) with the pregnant mothers in comparison to those who did not use such card. Similarly, knowledge among the service providers on place and person of referral for different obstetric complications also increase significantly ($P < 0.04$ to $P < 0.001$) after orientation on use of pamphlet. Pregnant women who received at least 2 ANC session were interviewed during antenatal care, before (n-172) and after (n-300) the use of pamphlet.

Mgwadere (2009) conducted a study on the assessing the level of awareness of antenatal care in Lungwana health centre in rural Malawi. The objectives of the study was to identify availability of resources (human and material) for providing antenatal care (ANC), examine pregnant women's initiative and frequency of antenatal visits, and establish providers/midwives skills, knowledge and practice in providing ANC. 259 women were interviewed using a structured questionnaire. Results indicated that, inadequate resources for

ANC provision. Most women started visiting ANC in second trimester. Despite availability of skilled service providers, there was lack of proper structure for providing ANC services.

Verma, Chatwal, Varughese (1994) carried out a study on antenatal period. An educational opportunity. The purpose of the study was to evaluate the impact of an educational programme during antenatal period. Experimental research design was adopted for the study. The first 100 mothers were not given health education served as control group. The subsequent 201 cases constituted the study group and were given health education on certain aspects of maternal and child care. The control and the study groups were well matched for age, parity, education, income and number of antenatal visit. The results indicated that, the mothers in the study group gained statistically significant knowledge regarding the purpose of antenatal care. The awareness regarding breastfeeding and its advantage also increase significantly in the study group.

High quality antenatal care is a fundamental right for women to safeguard their health. The state of women health in developing countries is not satisfactory, majority of them suffering from preventable and treatable risks and disease associated with child bearing (Nasir, Reheela&Amjad, 2007)

UNICEF and WHO (2008) asserted that, about 70% of women worldwide had at least one antenatal care visit with skilled provider during pregnancy. ANC coverage was extremely high in the industrialized countries, with 98% of women having at least one visit. In developing world, antenatal care use was around 68%. The region of the world with the lowest levels of use was South Asia, where only 54% of pregnant women have at least one antenatal visit. The levels in the remaining regions of the world range from 82% to 86%.

UNICEF and WHO (2008) further stated that, in Latin America, Caribbean, Middle East and North Africa the majority of women attend ANC at least four (4) times in one pregnancy and two third of these women attend ANC in the first trimester. However, in sub-

Sahara Africa most women present for antenatal care in the second trimester and a relatively a substantial proportion present only in the third trimester.

In the same vain Birung et al; (2006) further explained that, a substantial proportion (45 percent) of pregnant women wait until the second or third trimester to seek antenatal care when it is too late to take potential preventive measures for some complication such as anaemia. By the start of the sixth month of pregnancy, 12 percent of pregnant women have not made a single ANC visit. The median duration of gestation at which the first ANC visit is made is 4 months. Worse still, an estimated 6 percent of women do not make a single ANC visit; this figure is higher (9 percent) in rural areas.

Chandhiok, Dhillon, Kanbo and Sexena (2006) stressed that, antenatal care allows for the management of pregnancy, detection and treatment of complications, and promotion of good health. However, women rarely perceive child bearing as problematic and therefore, do not seek care. This affects the utilization of the maternal health services in region of the country where poverty and illiteracy are wide spread. But possibility of complications occurring is there and routine checks are highly desirable. In most developing countries such as Nigeria three quarters of pregnant women with a gestation of more than 4 month had at least one antenatal care contact. The level of utilization of antenatal care services was not the same across the region. This is likely to be due to differences in availability and accessibility of care among the region. Since the time of antenatal care is determine by traditional customs in rural areas, repeated information, education and communication activities are require to motivate pregnant women to register early.

Chandhiok et al. (2006) further explained that, one of the best things that antenatal care could accomplish is to influence women to have an institutional delivery with a trained attendant at birth, a factor known to promote child survival and decrease maternal mortality.

2.6 Utilization of Antenatal care

Access and utilization of health facilities by the public is determined largely by availability of health facilities, location and perception of the significance of health.(WHO, 2008) The choice of health facility is dictated by economic factors or influenced by significant others, in a situation whereby the cost of obtaining health services from a particular institution is unaffordable, some resort to self-medication by patronizing hawkers of both herbal preparations and modern pharmaceutical drugs on streets or in transport vehicles. This attitude has serious threat to reproduction which determines the continuity of the society. Unfortunately, this gloomy picture of poor maternal health among women of child-bearing age is common among many countries of the third world. The implication here is that the life expectancy of child-bearing women is reduced due to maternal mortality. It is estimated that 37,000 maternal deaths occurred in Nigeria alone in 1999 (UNICEF, UNPFA, WHO 2008). A more recent estimate showed that over 52,000 women died of pregnancy related complications in 2007 in Nigeria (Dada, 2008).

Despite the introduction of modern facilities, available statistics show that the majority of children are born by Traditional Birth Attendants (TBAs) in rural areas of Nigeria (WHO, 2010). In any society, there are usually measures to ensure the good health of individuals generally and women. In these societies, the health care system is purely western orthodox while in others it involves the combination of orthodox and traditional ways. In Nigeria and in fact, most of Africa, the latter is prevalent. According to Martey et al., (1998), the health system in Ashanti Region, as it operates in the rest of Ghana is made up of three sub-systems, namely, public, private and traditional. The public sub-system is made up of essentially what is referred to as orthodox medical services provided in government health facilities. The private sub-system refers to orthodox medical services provided in private (including missionary) hospitals, clinics, maternity homes, chemists shops which are all profit

oriented. The traditional subsystem refers to medical services provided by herbalists, bonesetters, traditional healers, spiritual healers, traditional birth attendants and many others. In Ghana for instance, the public health sector provides 60% of the health care followed by the traditional sector, which provide, 30% and the rest by the private sector (Martey et al., 1996). By implication, some amount of medical service is provided by the traditional sector with Traditional Birth Attendants (TBAs) alone making up 30% of healthcare.

Utilization of maternal health facilities by women of child bearing age has direct bearing on maternal and infant morbidity and mortality. This feature is noticeable in most third world countries including Nigeria. The high rate of maternal morbidity and mortality therefore indicates that majority of Nigerian women do not have good maternal health as captured by the United Nations. For women to have good maternal health there must be availability and accessibility of these women to modern maternal health facilities. This is because it has been indicated that despite the introduction of modern health facilities, studies have shown that majority of children in developing areas are born by Traditional Birth Attendants (TBAs). These are untrained midwives who often do not refer complications to appropriate quarters as a result; several women and children are subjected to preventable deaths. In a study among the Esan people of Edo state, Okolocha et al, (1998) found that because of the people's location, it is difficult to access health facilities. Lack of education among women undoubtedly contributes to the widespread self-neglect characteristic of many African women. They tend to be inattentive to their own illness and health needs and fail to seek care. It is for lack of education and its corollary – ignorance among other factors that often make women passively accept the conditions of life that are meted to them in the name of culture and tradition. It was on this note that Njikam (1994) concluded that the low level of education together with the fact that over 60% of the population are rural –based in Nigeria that cultural norms and practices still exert a strong influence on reproductive health care

especially in relation to pregnancy, delivery and child rearing. For instance, local beliefs on causation of illness, subsequent treatment and prevention often prevent timely medical intervention. Local beliefs indicate that prolonged labour is hereditary or may be just retribution for infidelity or adultery that will only abate with confession. Other issues border on ignorance or lack of education. Economic and financial status is an important consideration in the use of health services. Most hospitals and clinics have a basic, registration and consultation fee in addition to which may be added laboratory and prescription charges. Financial considerations pose real obstacles among the low – income groups. In the traditional setting especially, a rural area, this condition may be very challenging. Sometimes, even the availability of financial power may not change the healthcare behaviour of people due to their culture of poverty

Poverty is often identified as a major barrier to human development. It is also a powerful brake on accelerated progress toward the Millennium Development Goals. Poverty is also a major cause of maternal mortality, as it prevents many women from getting proper and adequate medical attention due to their inability to afford good antenatal care.

Poverty exists when people lack the means to satisfy their basic needs. These may be defined narrowly as "those needs necessary for survival"(Safra, 2003) or broadly as "those needs reflecting the prevailing standard of living in the community". Reproductive ill health is both a cause and consequence of poverty (Family Care International, 2005).

Another study was conducted by Joseph, Charles, Clement and Prakash (2005) on utilization of antenatal services in apparel manufacturing factories in Bangalore. The objective of the study was to identify the outcomes of the services that are provided to the pregnant woman in seven factories belonging to the company self-structured questionnaire was used to collect data. Results showed that, half of the workers who had been provided services in antenatal period had not returned to work. A majority of the workers had availed

of adequate antenatal care and most of them had delivered in the local Employee's State Insurance (ESI) hospital. Knowledge of antenatal care was generally good and most of information had been received from the health care providers (HCP). The positive role of the HCPs in these factories has been recognized and they should be provided with adequate support and training to perform their functions optimally.

YangYe, Yoshitoku and Yoshida (2010) conducted a study on factors affecting the utilization of antenatal care services (ANC) among woman in Kham district of Japan. The purpose of the study was to identify the socio-demographic characteristics, knowledge, attitude and accessibility factors related to the utilization of antenatal care (ANC) services among pregnant women in Kham district. Data for this cross-sectional study were collected in July 2008. A total of three hundred and ten (310) married woman of reproductive age who had at least one child and had delivered the last child within two years from the date of data collection were interviewed using structured questionnaires. To examine predictors of ANC utilization, odds ratio (OR) and 95% confidence intervals (CI) were estimated through a logistic regression model. The results showed that, about 53.9% of mothers did not received any ANC services due to the following reasons: no time (93.4%), not necessary (83.8%), feeling embarrassed (74.3%) and living far away from the ANC facility (71.3%). Also results showed that, significant predictors of ANC utilization (P -value < 0.05) were: level of education (OR=6.8, 95% CI=2.7-16.8), income (OR=2.6, 95% CI=1.2-5.7), Knowledge (OR=6.5, 95% CI=2.4-17.6), attitude (OR=3.0, 95% CI=1.3-7.1), distance (OR=2.9, 95% CI=1.1-7.6), availability of public transport (OR=4.5, 95% CI=2.0 – 10.4), cost of transportation (OR=2.5, 95% CI=1.1-5.7) and cost of service (OR=4.6, 95% CI=2.2-96)

2.7 Proficiency of Antenatal Care Personnel

Skilled maternity care throughout pregnancy, childbirth, and the postpartum period is globally recognized as one of the most promising strategies for reducing maternal mortality (UNFPA, 2007). Rates of skilled attendance at childbirth are being used as the main indicator to measure progress toward the Millennium Development Goal of reducing maternal mortality by three-fourths by the year 2015 (MDG 5). Currently, almost half of women in developing countries go through childbirth without such care. Moreover, there has been little evidence-based research available to help guide efforts to increase skilled attendance rates. As Miller et al, (2009). Noted in that, “There is no clear evidence on the best way to ensure appropriate care of women in developing countries who require life-saving interventions in the delivery and postpartum period (WHO, 2008). Globally, it is estimated that 34% of the mothers deliver with no skilled attendant; this means there are 45 million births occurring at home without skilled health personnel each year. Skilled attendants assist in more than 99% of births in developed countries compared with 62% in developing countries. In five countries including Ethiopia the percentage drops to less than 20% (WHO, 2005). Skilled attendance at delivery is one of the key indicators to reflect progress towards the Millennium Development Goal of improving maternal health. The agreement set the goal of 40% of all births to be assisted by a skilled attendant by 2005, with 50% coverage by 2010 and 60% by 2015 among countries with very high maternal mortality. Globally, the goal is to have 80% of all births assisted by skilled attendants by 2005, 85% by 2010 and 90% by 2015(Stanton et al, 2006).

A study from South India showed that assistance during delivery can reduce the risk of obstructed labour and it is highly associated with the place of delivery (Navaneetham et al, 2000) Another study also presented the role of assisted skilled birth attendants in preventing direct and indirect cause of maternal deaths such as, infection, shock, blood loss, convulsions,

and surgical procedures, such as caesarean delivery (AbouZahr, 2003). Maternal mortality and morbidity are directly and indirectly related to societal and cultural factors that impact women's health and their access to services (AbouZahr, 2003). Thus, lack of access and control over resources, limited educational opportunities, poor nutrition, and lack of decision-making contribute significantly to adverse pregnancy related outcomes. Review of the international literature also emphasizes factors like cultural beliefs, socio-demographic status, women's autonomy, economic conditions, physical and financial accessibility, disease pattern and health service issues to be important determinants of the use of maternal health care services (AbouZahr, 2004).

Skilled care at delivery has been identified as one of the key interventions for reducing maternal mortality and improving neonatal outcomes. Ensuring that all women have access to skilled care is particularly critical because most obstetric complications are difficult to predict, and any woman can suddenly, without warning, develop a life-threatening emergency. Through the Skilled Care Initiative (SCI), Family Care International (FCI), with funding from the Bill and Melinda Gates Foundation, has been developing and testing a model for improving women's access to skilled care during pregnancy, childbirth, and the postpartum period. A key component of this initiative has been ensuring that maternity care providers are equipped with the cognitive, clinical, and interpersonal competencies needed to provide skilled care (UNPFA, 2007).

World Health Organization (2004) recommends that maternity care providers receive refresher training or updates in midwifery every three to five years. In the three project countries, provider interviews revealed that on average, maternity care providers had been in service for 11 years since completing their basic training, and 36% had never received any refresher training in midwifery in that time. Not only did maternity care providers have few training opportunities, but baseline studies of the quality and availability of maternal health

care highlighted critical gaps in their clinical and interpersonal skills. For example, only 30% of maternity care providers reported that they had used a pantograph within the three-month period prior to the study. Similarly, the majority of providers in project districts could not name all appropriate steps for diagnosing and managing potentially lethal obstetric complications such as pre-eclampsia/eclampsia, postpartum haemorrhage, or postpartum sepsis.

A midwife is a person trained to provide care to women during pregnancy, labour and after delivery; trained to recognise problems, and whose training is recognized by the government that provides a licence for him/her to practice. This is the international definition that is recognised by the World Health Organisation, the International Confederation of Midwives (ICM) and the International Federation of Gynaecologists and Obstetricians (FIGO). Such a midwife is trained to act decisively and independently in conducting births; ascertain risks of women in pregnancy and labour and (where possible, depending on need) manage complications as they arise (WHO, 2008).

2.8 Summary of the Review of the Related Literature and Uniqueness of the Study

It is quite significant to note that Nigeria is among the numerous countries that signed the millennium development goals, safe motherhood initiatives and reproduction health plans and policies by WHO, maternal mortality has been at the higher levels. Geographical differences in the country remain considerable.

Maternal mortality trends allow for certain amount of optimism in some areas of Latin America, North Africa, Asia and Middle East, but the situation in Nigeria in particular and sub-Saharan Africa in general is still alarming. In fact, out of the health indicators, maternal mortality is where the differences between industrialized and developing countries are the most evident, with levels twenty times higher in the later than the former. In sub-Saharan

Africa, one woman out of sixteen dies for reasons relating to maternity, compared with only one out of two thousand eight hundred in industrialized countries (WHO, 2008).

This study is unique, because an attempt was made to examine the relationship of antenatal care with the prevention of Maternal Mortality among Pregnant Women in Bauchi state. The fact that, several studies was conducted on maternal mortality and antenatal care in other parts of Nigeria and the world at large, but this study differs from such studies in terms of scope, population, sample and sampling techniques.

CHAPTER THREE

Research Methodology

3.0 Introduction

This study is on relationship of Antenatal care with the prevention of maternal mortality among pregnant women in Bauchi state. This chapter discusses the research design, population of the study, sample and sampling technique, research instrument, validation of the instrument, reliability of the instrument, administration of questionnaire and statistical techniques.

3.2 Research Design

An ex-post facto research design was adopted to study the relationship of antenatal care with the prevention of maternal mortality among pregnant women in Bauchi state. Asika (2009), stressed that, ex-post facto (after the fact) research design is a systematic empirical study in which the researcher does not in any way control or manipulate independent variable because the situation for the study already exist or has already taken place. The researcher cannot manipulate the independent variable because it cannot be manipulated. But researcher can indeed create or contrive a situation that will generate the requisite data for analysis. Therefore, ex-post facto is found suitable for this study since the data already existed.

3.3 Population of the Study

The population of this study comprises of all pregnant women attending antenatal care in Maternity clinics of Bauchi state. The estimated population size is 1400 registered pregnant women attending antenatal care. This figure was obtained from the antenatal care registers of the maternity clinics of the study areas from January to September 2011.

3.4 Sample and Sampling Techniques

The researcher used stratified random sampling techniques to draw a sample of 312 from the population of 1400 registered pregnant women attending antenatal care in Bauchi state. This selection is in accordance with Krejcie and Morgan (1970) who recommended that 302 can be drawn from the population of 1400. 52 pregnant women were randomly selected from the sampled maternity clinics. The researcher used the registration numbers of all registered pregnant women attending antenatal care in the sampled maternity clinics. These numbers were written on the pieces of papers and put in a container, after vigorously shaken to ensure randomisation, 52 pieces of paper were taken out at random (one after another) from the container. The numbers on each of the papers were recorded and the women whose numbers were picked and recorded constitute the sample for this study. In order to allow for equal number of samples and convenience in each of the sampled local Government Areas 312 was used as the sample for this study.

In selecting the local government areas of this study, the state was stratified into three senatorial districts that is Bauchi-south senatorial district, Bauchi-central senatorial district and Bauchi-north senatorial district. Two local Government Areas were randomly selected from each senatorial district. The names of the local Governments in each senatorial district were written on a slip of paper; the slips were folded and put in a container. After thorough reshuffling, the researcher, not looking in to the container, dips his hand and picks one slip, He unfolds the slip and records the name of the local Government it contains. This process was repeated until the required numbers of local Governments in each of the senatorial districts were drawn. The selection from the senatorial districts and maternity clinics was done in order to ensure that the data collected provides unbiased, suitable close estimates of the characteristics of the sampled population pertaining to the problem being studied.

The above selection details were summarized in table 3.1 below

Table 3.1: Distribution of the Respondents by Senatorial Districts, Local Government Areas and Sampled Size of Pregnant Women

SENATORIAL DISTRICT	TOTAL NO OF LGA	SAMPLE LGA	TOTAL NO OF MATERNITY CLINICS	SAMPLE MATERNITY CLINICS	TOTAL NO OF REGISTERED PREG. WOMEN	SAMPLED SIZE OF PREG. WOMEN
BAUCHI-NORTH	7	KATAGUM	2	URBAN MATERNITY	294	52
		GIADE	1	TOWN MATERNITY	140	52
BAUCHI-CENTRAL	6	MISAU	2	TOWN MATERNITY	268	52
		NINGI	2	TOWN MATERNITY	242	52
BAUCHI-SOUTH	7	BAUCHI	2	URBAN MATERNITY	300	52
		DASS	1	TOWN MATERNITY	156	52
TOTAL	20		10		1400	312

3.5 Research Instrument

The researcher developed the instrument used in this thesis in order to obtain the required information. A four (4) point modified likert's scale questionnaire was used to collect data for this study. The four (4) pointslikert's scale was scored as follows: Strongly agree, 4 points; Agree, 3 points; Disagree, 2 points; and Strongly Disagree, 1 point. The questionnaire consisted of five sections A-F. Section A sought information on demographic characteristics of the respondents; section B contains information on the level of awareness of

pregnant women on the relationship of ANC with the prevention of maternal mortality; section C concern with the level of utilization of ANC for the prevention of maternal mortality; section D deals, contains information on equipment and facilities of ANC services; section E is concern with the information on the proficiency of the personnel that provide ANC services and section F is concern with the information on the prevention of maternal mortality

3.6 Validation of the Instrument

In order to ensure the face and content validity of the instrument, the researcher-structured questionnaire was submitted to five professional experts in the field of Health education, Exercise and sport science and Community medicine for vetting so as to ensure their appropriateness, relevance and clarity. Their suggestions and corrections has been incorporated in the final draft of the questionnaire

3.7 Reliability of the instrument

Test-re-test reliability method was employed to establish the reliability of this research instrument. According to Asika (1991) in test-re-test reliability, the same measuring instrument was used to obtain two separate measurements on the same population at different times. The higher the degree of correlation between the two measurements, the higher the reliability of the instrument. In this study, the instrument was subjected to pilot study using 25 pregnant women in Jama'are Local Government.

After three weeks of first administration, the same instrument was re-administered to the same respondents. The result of first and second test was statistically analyzed using Pearson product moment correlation coefficient and reliability index of (r-0.78) was obtained which indicate high reliability of the instrument.

3.8 Administration of Questionnaire

To collect data for this study, a total of three hundred and twelve (312) questionnaire copies were distributed to pregnant women in maternity clinics of the six local Government Areas selected in Bauchi state. The researcher employed six research assistants (one research assistant from each maternity clinic) for the purpose of distribution and collection of the questionnaire. The research assistants were drawn from among the Health professionals. They were oriented on the purpose and nature of this research work. The researcher trained the research assistants in the techniques of administering the questionnaire. The researcher and the research assistant administered the questionnaire to the pregnant women. In the process of administering the questionnaire, those women who can read and write were given the questionnaire to respond while those who cannot read and read and write the questionnaire were administered to them by the researcher and the research assistants. Completed copies of questionnaires were retrieved after two days of administration. The data analysis was based on the responses of the three hundred and eight (308) subjects whose questionnaire copies were correctly completed and returned.

3.9 Statistical techniques

The statistical techniques that were used in analyzing the data collected for this study were:

- a. Descriptive statistics of frequencies, percentages, means and standard deviations.
- b. Inferential statistics of Pearson Product Moment Correlation Coefficient analysis was used to test the hypotheses. All tests were carried out at 0.05 alpha level of significance. This statistics is suitable for this study, this is because, the study is on relationship between antenatal care and prevention of maternal mortality among pregnant women. The purpose of correlation analysis to establish the relationship between the dependent and independent variables.

CHAPTER FOUR

Results and Discussion

4.0 Introduction

The purpose of this study was to investigate the relationship of antenatal care with the prevention of maternal mortality among pregnant women in Bauchi state. To achieve this purpose data collected was statistically analyzed using statistical package for social sciences (SPSS) version 16. The item scores were based on four (4) points modified liker's scale. The relative mean for each of the item were calculated with 4 as the highest and 1 the lowest score. Thus the criterion or acceptance mean of 2.5 was used in making decisions. If the relative means of an item is equal to or greater than 2.5, it is considered that the respondents are in agreement with the suggested item, while any mean less than 2.5 imply disagreement. The demographic variables were presented in frequencies and percentages while other responses were presented by their mean score and standard deviation as expressed by the respondents. A Pearson product moment correlation co-efficient statistical analysis was used to test the hypotheses at 0.05 level of significance.

4.2 RESULTS

4.1: Information on Demographic Characteristic of the Respondents

Variable	Category	Frequency	Percentage
(a) Age (years)	15-20	90	29.8
	20-29	117	38.7
	30-39	77	24
	40-45	24	7.6
	Total	308	100
(b) Occupation	Civil servant	87	28.8
	Business	88	28.1
	Farming	1	0.3
	Unemployed	132	43.7
	Total	308	100
(c) Marital status	Single	0	0
	Married	285	94.3
	Divorce	25	5.7
	Total	308	100
(d) Education qualification	Qur'anic	99	32.7
	Primary	78	25.8
	Secondary	92	29.8
	Tertiary	39	11.9
	Total	308	100

Table 4.1 above shows that 90(29.8%) of the respondents were between the ages of 15-24 years, and 117(38.7%) were 25-29 years, 77(24%) were ages 30-39 years while 24(7.6%) were ages 40 years and above. The table 4.1item (b) also revealed that, 87(28.8%) of the respondents were civil servants, 88(28.1%) were Businesswomen, 1(0.3%) were farmers while 132(43.7%) were unemployed. In terms of marital status, 285(94.3%) were married women while, 25(5.7%) were divorced women.

The table further indicates that, 99(32.7%)of the respondents attend Quranic school,78(25.8%) attend primary school, 92(29.8%) attend secondary school while 39(11.9%) attend tertiary institutions. This implies that, majority of the pregnant women are unemployed and attend qur'anic education.

Table 4.2: Mean and Standard Deviation of Responses of Pregnant Women on the Level of Awareness of Antenatal Care on the Prevention of Maternal Mortality

S/N	Statements	Mean	Standard deviation
1.	Antenatal care prepares a pregnant women for safe delivery	1.49	0.501
2.	Pregnancy related risk can be detected during antenatal care visits	1.78	0.415
3.	Antenatal care if welled attended helps to prevent maternal morbidity and mortality	1.75	0.500
4.	Health education taken during antenatal care creates awareness of an sexually transmitted infections (STI)	2.50	0.698
5.	Antenatal care detects and manages pregnancy at risk such as breach presentation	2.52	0.701
6.	Health education provided during ANC session help acquire basic knowledge on nutrition, personal hygiene and environmental sanitation	2.67	0.837
	Aggregate mean score	2.11	0.762

Table 4.2 shows that, item number 6 had the highest means score (2.67), which indicated that the respondents are in agreement with the idea that, health education provided during antenatal care help acquire basic knowledge on nutrition, personal hygiene and environmental sanitation. Next to item 6 is item number 5, which had a mean score of 2.52, which indicates that antenatal care detects and manages pregnancy at risk such as breach presentation. This is followed by item number 4, with a mean score of 2.50, which indicated that the respondents agreed that health education taken during antenatal care creates awareness on sexually transmitted infections.

For all other items, the mean scores were relatively less than 2.5, which imply that, the respondents disagreed with the suggested items. Among these were items 3, with mean score of 1.75 indicating that antenatal care if well attended help to prevent maternal morbidity and mortality; item 2, with means score of 1.78 which indicates that pregnancy related risk can be detected during antenatal care visits; item 1, with mean score of 1.49, indicating that, antenatal care prepares pregnant woman for safe delivery. The aggregate mean score of 2.11 was obtained which is relatively less than the acceptance mean of 2.5. This shows that there is low level of awareness about antenatal care among pregnant women.

Table 4.3: Mean and Standard Deviation of Responses of Pregnant Women on the Level of Utilization of Antenatal Care on the Prevention of Maternal Mortality

S/N	Statements	Mean	Standard deviation
1.	Attending antenatal care during each pregnancy is a step in prevention of maternal mortality	2.07	0.761
2.	Accessibility to health facility offering ANC services enhance high utilization of ANC among pregnant women	2.29	0.933
3.	Attending ANC throughout the period of pregnancy helps in preventing maternal mortality before, during and after delivery	3.05	1.021
4.	Hospital delivery reduces maternal mortality	3.15	1.054
5.	Safe motherhood initiatives services offered in the hospital ensure adequate utilization of ANC by the pregnant women	2.34	0.901
6.	Health education programme offered during ANC visit encourages pregnant women to attend hospital for ANC services	3.34	1.343
	Aggregate mean score	3.045	0.827

The mean scores shown in table 4.3 above are based on the four points modified likers scale. The table shows that, item number 6, had the highest mean score (3.34) which indicate that, health education programme offered during ANC visit encourages pregnant women to attend hospital for ANC services. Next to item 6 is item number 4, which had a mean score of 3.15 which indicate that, hospital delivery, reduces maternal mortality.

This is followed by item number 3, with a mean score of 3.02, which indicate that, attending antenatal care throughout the period of pregnancy is a step in preventing maternal mortality before, during and after delivery. For all other items, the means score were relatively less than 2.5, which implies that the respondents disagreed with the suggested items. Among these were items 2, with mean score of 2.29, which indicated, that accessibility to health facility offering ANC services enhances high utilization of ANC among pregnant women. Item 5, with mean score of 2.34, indicates that safe motherhood initiative offered in the hospital ensure adequate utilization of ANC by pregnant women; and item 1, with mean score of 2.07, which indicates that, attending antenatal care during each pregnancy is a step in prevention of maternal mortality. The aggregate mean score of 3.0 was obtained which is greater than the acceptance mean of 2.5. This implies that, there is high utilization of antenatal care services among pregnant women

Table 4.4: Mean and Standard Deviation of Responses of Pregnant Women on the Availability of ANC Equipment and Facilities on the Prevention of Maternal Mortality

S/N	Statements	Mean	Standard deviation
1.	There is availability of ANC kits for quality antenatal care in the clinic I am attending antenatal care services	3.03	1.02
2.	There is availability of haemoglobin estimation kits for detection of anaemia in the clinic I am attending for ANC	3.02	1.015
3.	There is availability of urinalysis kits for detection of pregnancy disorders in the facility I am attending ANC	2.98	0.995
4.	Rapid Diagnostic Test (RDT) for detecting malaria in pregnancy is available in the facility I am attending ANC	3.01	1.013
5.	There is availability of BP apparatus and faetal stethoscope in the clinic I am attending ANC	2.98	0.995
6.	Ultra sound scanning machine is available in the facility I am attending ANC	2.00	0.898
	Aggregate mean score	2.99	0.996

Table 4.4 above shows that, item number 1, had a highest mean score of 3.03, which indicates that availability of ANC kits provides quality antenatal care. Next to item 1, is item 2, with mean score of 3.02, which indicates, that, there is availability of haemoglobin estimation kits for detection of anaemia in the clinic I am attending ANC; item 4, with mean score of 3.01, which indicates that rapid diagnostic test (RDT) for detecting malaria in

pregnancy is available in the facility lam attending antenatal care, the next item is item 3, with mean score of 2.98, which indicates that, there is availability of urinalysis kits for detecting pregnancy disorders in the facility lam attending ANC; items 5, with mean score of 2.98, which indicates that, there is availability of blood pressure apparatus and faetal stethoscope in the clinic lam attending ANC. Item 6, has a mean of 2.00 which is less than 2.5. Therefore the respondents are in disagreement with the statement in item 6, which indicates that, Ultra sound scanning machine is available in the facility lam attending ANC. The aggregate mean score of 2.99 is greater than 2.5; this indicates that, there is availability of equipment and facilities for antenatal care.

4.5: Mean and Standard Deviation of Responses of Pregnant Women on the Proficiency of ANC Personnel on the Prevention of Maternal Mortality

S/N	Statements	Mean	Standard deviation
1.	Antenatal carepersonnel Possess skills to prevent obstetric death.	3.28	1.262
2.	Antenatal care personnel Provide quality antenatal care to pregnant women.	2.33	0.901
3.	Antenatal care personnel Recognize and manage malaria in pregnancy	2.30	0.900
4.	Antenatal care personnel Recognize and manage anaemia in pregnancy	2.25	1.001
5.	Antenatal care personnel Recognize life threatening conditions above their capabilities and provide prompt referral	2.16	0.772
6.	Enlighten the community on influence of antenatal care and prevention of maternal mortality.	3.20	1.246
	Aggregate mean score	3.02	1.013

Table 4.5 above shows that, item number 1 had highest mean score (3.28), which indicates, that antenatal care personnel possess skills to prevent obstetric death. Next to item 1 is item 6, with mean score of 3.20 which indicates that, enlighten the community on influence of antenatal care and prevention of maternal mortality.

For the rest of the items, their mean scores are less than 2.5; this indicates that, the respondents disagreed with the suggested items. These include item 4, with mean score of 2.25, which indicates that, the antenatal care personnel recognized and manage anaemia in pregnancy; item 2, with mean score of 2.33, which indicates that, they provide quality antenatal care to pregnant women in health institution she find herself; item 5, with mean score of 2.16 which indicates that, they recognizes life threatening condition above their capabilities and provide prompt referral; item 3, with mean score of 2.30, which indicates they recognizes and manage malaria in pregnancy. The aggregate mean score of 3.02 was greater than 2.5; this implies that, the antenatal care personnel are proficient in providing antenatal care services and prevention of maternal mortality on the general perspective.

Table 4.6: Mean and Standard Deviation of Responses of Pregnant Women on the Prevention of Maternal Mortality

S/N	Statements	Mean	Standard deviation
1.	Frequent antenatal care visits reduce the likelihood of obstetric complications, which may result to maternal mortality.	3.03	1.024
2.	Post abortion care help to prevent abortion related maternal death.	3.02	1.015
3.	Regular monitoring of blood pressure during pregnancy reduces the likelihood of eclampsia, which leads to maternal mortality.	2.98	0.995
4.	Prompt treatment of bleeding during pregnancy help in preventing maternal mortality.	3.01	1.013
5.	Post-natal care helps to prevent maternal mortality.	2.98	0.995
6.	Proper treatment of infection during pregnancy helps to prevent maternal mortality.	2.00	0.898
	Aggregate mean score	2.97	0.996

Table 4.6 above shows that, item number 1, had a highest mean score of 3.03, which indicates that frequent antenatal care visits reduce the likelihood of obstetric complications, which may result to maternal mortality. Next to item 1, is item 2, with mean score of 3.02, which indicates, that, Post abortion care help to prevent abortion related maternal death.; items 4, with mean score of 3.01, which indicates that Prompt treatment of bleeding during pregnancy help in preventing maternal mortality, the next item is item 3, with mean score of 2.98, which indicates that, regular monitoring of blood pressure during pregnancy reduces the likelihood of eclampsia, which leads to maternal mortality; items 5, with mean score of 2.98, which indicates that post-natal care helps to prevent maternal mortality., Item 6, has a mean of 2.00 which is less than 2.5. Therefore the respondents are in disagreement with the statement in item 6, which indicates that, proper treatment of infection during pregnancy helps to prevent maternal mortality. The aggregate mean score of 2.97 was greater than 2.5;

this implies that, pregnant women were aware of the preventive measures of maternal mortality.

4.2 Test of Hypotheses

This study has one major hypothesis and four sub- hypotheses. A Pearson product moment correlation co-efficient analysis was used to test the null hypotheses at 0.05 levels of significance. The results were presented according to each of the hypothesis stated.

Major Hypothesis

There is no significant relationship between the level of awareness, utilization, factors contributing to maternal mortality, equipment and facilities of antenatal care, proficiency of antenatal care personnel and the prevention of maternal mortality among pregnant women attending maternity clinics in Bauchi state.

Sub- Hypothesis 1

There is no significant relationship between level of awareness of pregnant women attending antenatal care clinics and the prevention of maternal mortality in Bauchi state. To test this hypothesis, Pearson product moment correlation co-efficient analysis (PPMC) was used. The results of which are in table 4.2.1

Table 4.2.1: Correlation Analysis on Relationship between Level of Awareness of Pregnant Women Attending Antenatal Care and Prevention of Maternal Mortality in Bauchi state

Variables	N	Mean	Standard deviation	Calculated correlation index	Critical R	Df	P
Level of awareness of antenatal care	308	9.1003	1.65597	0.386**	0.195	300	0.000
Prevention of maternal mortality	308	10.3358	1.97741				

$R = (308) = 0.386$ $P < 0.05$ significance

** Correlation is significant at 0.05 levels (2 tailed)

The results as indicated in table 4.2.1 above shows that, there is significant relationship between level of awareness of pregnant women attending antenatal care clinics and the prevention of maternal mortality in Bauchi state. The observed r- calculated (0.386) is greater than the critical value (0.195). The null hypothesis is therefore rejected.

Sub- Hypothesis 2

There is no significant relationship between level of utilization of antenatal care services and prevention of maternal mortality among pregnant women in Bauchi state. To test this hypothesis product moment correlation co-efficient was used for correlation between level of utilization of antenatal care services and the prevention of maternal mortality, the results of which are presented in table 4.2.2

Table 4.2.2: Correlation Analysis on Relationship between Level of Utilization of Antenatal Care Services and Prevention of Maternal Mortality among Pregnant Women in Bauchi State

Variables	N	Mean	Standard deviation	Calculated correlation index	Critical R	Df	P
Utilization of ANC services	308	10.33358	1.97741	0.261**	0.195	300	0.000
Prevention of maternal mortality.	308	10.2695	1.87393				

R= (308) = 0.261 P< 0.05 significance

The results of correlation analysis as indicated in table 4.2.2 above shows that, there is significant relationship between level of utilization of antenatal care services and the prevention of maternal mortality among pregnant women in Bauchi state. The observed r-calculated (0.261) is greater than, the critical value (0.195). The null hypothesis is therefore rejected.

Sub – Hypothesis 3

There is no significant relationship between availability of equipment and facilities of antenatal care services and the prevention of maternal mortality among pregnant women in Bauchi state. In order to test this hypothesis Pearson product moment correlation analysis was used. Table 4.2.3 shows the results of the analysis

Table 4.2.3: Correlation Analysis on the Relationship between Availability of Equipment and Facilities of Antenatal Care Services and Prevention of Maternal Mortality in Bauchi State

Variables	N	Mean	Standard deviation	Calculated correlation index	Critical R	Df	P
Availability of equipment and facilities	308	10.2695	1.87393	0.692**	0.195	300	0.05
Prevention of maternal mortality	308	9.1003	1.65597				

R = (308) 0.692 = P < 0.05 significance

** Correlation is significant at 0.05 levels (2 tailed)

Information in table 4.2.3 above shows that from the result of correlation analysis conducted, a calculated value of 0.692 was obtained. This value is found to be indication that significant relationship exist between availability of equipment and facilities of antenatal care services and prevention of maternal mortality in Bauchi state. The observed r- calculated (0.692) is greater than the critical value (0.195) the null hypothesis is therefore rejected.

Sub – Hypothesis 4

There is no significant relationship between the proficiency of antenatal care personnel and prevention of maternal mortality among pregnant women in Bauchi state. Result to test this hypothesis is contained in table 4.2.4

Table 4.2.4 Correlation Analysis on Relationship between Proficiency of Antenatal Care Personnel and Prevention of Maternal Mortality among Pregnant Women in Bauchi State

Variables	N	Mean	Standard deviation	Calculated correlation index	Critical R	Df	P
Proficiency of antenatal care personnel	308	10.3358	1.97741	0.440**	0.195	300	0.05
prevention of maternal mortality	308	10.2695					

$R = (308) = 0.440 < 0.05$ significance

** Correlation is significant at 0.05 levels (2 tailed)

The Results in table 4.2.4 above shows that, significant relationship exist between proficiency of antenatal care personnel and prevention of maternal mortality among pregnant women in Bauchi state. This is because the observed r- calculated (0.440) is greater than the critical value (0.195). The null hypothesis is rejected.

4.2 Discussion

This research work was specifically designed to determine the relationship of antenatal care with the prevention of maternal mortality among pregnant women in Bauchi state. The outcome of this study revealed that significant relationship existed between level of awareness of pregnant women attending antenatal care and prevention of maternal mortality in Bauchi State. This finding is in line with WHO (2004) which stressed that antenatal care provides an opportunity to educate the pregnant woman about pregnancy and childbirth. Under usage of antenatal care has been repeatedly associated with adverse maternal

outcomes. However there is controversy about the impact of antenatal education on pregnancy outcome. Antenatal education programs are a very important component of antenatal care worldwide since it makes women contribute to the maximum for a better pregnancy outcome and care of the neonate. Antenatal care provides advice, reassurance, education on nutrition during pregnancy, danger signs of pregnancy, and it detects the problems that make the pregnancy a high risk one.

In the same vein Verma, Chhatwal, Varughese (1994) carried out a study on antenatal period. An educational opportunity. The purpose of the study was to evaluate the impact of an educational programme during antenatal period. Experimental research design was adopted for the study. The first 100 mothers were not given health education served as control group. The subsequent 201 cases constituted the study group and were given health education on certain aspects of maternal and child care. The control and the study groups were well matched for age, parity, education, income and number of antenatal visit. The results indicated that, the mothers in the study group gained statistically significant knowledge regarding the purpose of antenatal care. The awareness regarding breastfeeding and its advantage also increase significantly in the study group.

The outcome of this study also revealed significant relationship between the level of utilization of antenatal care and prevention of maternal mortality among pregnant women in Bauchi state. This finding coincide with UNFPA (2007) which stressed that Utilization of maternal health facilities by women of child bearing age has direct bearing on maternal and infant morbidity and mortality. This feature is noticeable in most third world countries including Nigeria. The high rate of maternal morbidity and mortality therefore Indicates that majority of Nigerian women do not have good maternal health as captured by the United Nations. For women to have good maternal health there must be availability and accessibility of these women to modern maternal health facilities. This is because it has been

indicated that despite the introduction of modern health facilities, studies have shown that majority of children in developing areas are born by Traditional Birth Attendants (TBAs).

These are untrained midwives who often do not refer complications to appropriate quarters as a result; several women and children are subjected to preventable deaths.

In the same view Utilization of maternal health facilities by women of child bearing age has direct bearing on maternal and infant morbidity and mortality. This feature is noticeable in most third world countries including Nigeria. The high rate of maternal morbidity and mortality therefore indicates that majority of Nigerian women do not have good maternal health as captured by the United Nations. For women to have good maternal health there must be availability and accessibility of these women to modern maternal health facilities. In a study among the Esan people of Edo state, Okolocha et al (1998) found that because of the people's location, it is difficult to access health facilities. Lack of education among women undoubtedly contributes to the widespread self-neglect characteristic of many African women. They tend to be inattentive to their own illness and health needs and fail to seek care. It is for lack of education and its corollary – ignorance among other factors that often make women passively accept the conditions of life that are meted to them in the name of culture and tradition. It was on this note that Njikam (1994) concluded that the low level of education together with the fact that over 60% of the population are rural –based in Nigeria that cultural norms and practices still exert a strong influence on reproductive health care especially in relation to pregnancy, delivery and child rearing. For instance, local beliefs on causation of illness, subsequent treatment and prevention often prevent timely medical intervention. Local beliefs indicate that prolonged labour is hereditary or may be just retribution for infidelity or adultery that will only abate with confession. Other issues border on ignorance or lack of education.

Finding of this study also revealed that, significant relationship existed between the proficiency of antenatal care personnel and prevention of maternal mortality among pregnant women in Bauchi state. This outcome is in agreement with WHO (2008) which stated that, skilled maternity care throughout pregnancy, childbirth, and the postpartum period is globally recognized as one of the most promising strategies for reducing maternal mortality. Rates of skilled attendance at childbirth are being used as the main indicator to measure progress toward the Millennium Development Goal of reducing maternal mortality by three-fourths by the year 2015 (MDG 5). Currently, almost half of women in developing countries go through childbirth without such care. Moreover, there has been little evidence-based research available to help guide efforts to increase skilled attendance rates (Miller et al;2008)

It is also in line with WHO(2005) which stated that, globally, it is estimated that 34% of the mothers deliver with no skilled attendant; this means there are 45 million births occurring at home without skilled health personnel each year. Skilled attendants assist in more than 99% of births in developed countries compared with 62% in developing countries. In five countries including Ethiopia the percentage drops to less than 20%. Skilled attendance at delivery is one of the key indicators to reflect progress towards the Millennium Development Goal of improving maternal health. The agreement set the goal of 40% of all births to be assisted by a skilled attendant by 2005, with 50% coverage by 2010 and 60% by 2015 among countries with very high maternal mortality. Globally, the goal is to have 80% of all births assisted by skilled attendants by 2005, 85% by 2010 and 90% by 2015 (Stanton et al, 2006).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter presented the summary, conclusion and recommendations of this study.

5.1 Summary

The study was carried out to investigate the relationship of antenatal care with the prevention of maternal mortality among pregnant women in Maternity clinics of Bauchi state. In order to achieve the purpose of the study, five specific objectives were stated, five research questions were raised and five null hypotheses were formulated. An ex-post facto research design was adapted for this study. Stratified random sampling techniques were used to select 312 respondents from a population of 1400 pregnant woman attending antenatal care in Maternity clinics of Bauchi state.

Data collected on demographic characteristics of the respondents were presented in tables and analysed using frequencies, percentage mean and standard deviation while Pearson product moment correlations (PPMC) were used to verify the hypotheses at 0.05 level of significance. From the above, the following were the findings of this study:

1. Significant relationship existed between level of awareness and prevention of maternal mortality among pregnant women in Bauchi State.
2. Significant relationship existed between level of utilization of antenatal care services among pregnant women and prevention of maternal mortality in Bauchi state.
3. Significant relationship existed between availability of equipment and facilities of antenatal care services and the prevention of maternal mortality in Bauchi state.
4. Significant relationship existed between the proficiency of antenatal care personnel and prevention of maternal mortality among pregnant women in Bauchi state.

5.2 Conclusion

Based on the findings of this study, the following conclusions were drawn:

1. High level of awareness of antenatal care services among pregnant women prevents maternal mortality.
2. Adequate utilization of antenatal care services by pregnant women prevents maternal mortality.
3. Availability of facilities and equipment of antenatal care services prevents maternal mortality among pregnant women.
4. Proficiency of antenatal care Personnel prevents maternal mortality among pregnant women.

5.3 Recommendation

Based on the findings of the study, the following recommendations were made;

1. Health educators, nurses and other health professionals should regularly create awareness on antenatal care among pregnant women since it prevent maternal mortality.
2. Pregnant women should be encouraged to utilize antenatal care services regularly in order to prevent maternal mortality.
3. Government and nongovernmental organisations should provide adequate equipment and facilities of antenatal care services to nook and corners of the state in order to prevent maternal mortality. Government and nongovernment organisations should organize training and re-training of health professionals in the state on Antenatal care services and prevention of maternal mortality.

5.4 Suggestion for Further Studies

A study of this nature can not cover every area hence; there is need for further studies. It is on this basis that, the researcher suggested that further researches should be carried out on antenatal and maternal mortality in other part of the country.

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SECTION B: Awareness of ANC on the prevention of Maternal Mortality

S/N	Statement	SA	A	D	SD
1.	Antenatal care prepares a pregnant woman for safe delivery.				
2.	Pregnancy related risks can be detected during antenatal visits.				
3.	Antenatal care if well attended helps to prevent maternal morbidity and mortality.				
4.	Health education taken during antenatal care detects sexually transmitted infection (STIs).				
5.	Antenatal care detects and manages pregnancy at risk such as breach presentations.				
6.	Health education provided during ANC session help acquire basic knowledge on nutrition, personal hygiene and environmental sanitation				

SECTION C: Utilization of ANC on the prevention of maternal mortality

S/N	Statement	SA	A	D	SD
1.	Attending ANC during each pregnancy is a step in preventing maternal mortality.				
2.	Accessibility to health facility offering ANC services enhance high utilization of ANC among pregnant women				
3.	Attending ANC throughout the period of pregnancy helps in preventing maternal mortality before, during and after delivery				
4.	Hospital delivery reduces maternal mortality				
5.	Safe motherhood initiatives services offered in the hospital ensure adequate utilization of ANC by the pregnant women				
6.	Health education programme offered during ANC visit encourages pregnant women to attend hospital for ANC services				

SECTION D: Availability of ANC Facilities and Equipment

S/N	Statement	SA	A	D	SD
1.	There is availability of ANC kits for quality antenatal care in the clinic I am attending antenatal care services				
2.	There is availability of haemoglobin estimation kits for detection of anaemia in the clinic I am attending for ANC				
3.	There is availability of urinalysis kits for detection of pregnancy disorders in the facility I am attending ANC				
4.	Rapid Diagnostic Test (RDT) for detecting malaria in pregnancy is available in the facility I am attending ANC				
5.	There is availability of BP apparatus and fetal stethoscope in the clinic I am attending ANC				
6.	Ultra sound scanning machine is available in the facility I am attending ANC				

SECTION E: Proficiency of theANC Personnel

S/N	Statement	SA	A	D	SD
1.	Antenatal care personnel Possess skills to prevent obstetric death.				
2.	Antenatal care personnel Provide quality antenatal care to pregnant women.				
3.	Antenatal care personnel Recognize and manage malaria in pregnancy				
4.	Antenatal care personnel Recognize and manage anaemia in pregnancy				
5.	Antenatal care personnel Recognize life threatening conditions above their capabilities and provide prompt referral				
6.	Enlighten the community on influence of antenatal care and prevention of maternal mortality.				

SECTION F: Prevention of Maternal Mortality

S/N	Statement	SA	A	D	SD
1.	Frequent antenatal care visits reduce the likelihood of obstetric complications, which may result to maternal mortality.				
2.	Post abortion care help to prevent abortion related maternal death.				
3.	Regular monitoring of blood pressure during pregnancy reduces the likelihood of eclampsia, which leads to maternal mortality.				
4.	Prompt treatment of bleeding during pregnancy help in preventing maternal mortality.				
5.	Post-natal care helps to prevent maternal mortality.				
6.	Proper treatment of infection during pregnancy helps to prevent maternal mortality.				