RESEARCH TOPIC: FACTORS ASSOCIATED WITH MATERNAL MORTALITY IN NIGERIA

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CERTIFICATION

This is to certify that POPOOLA OLADOYIN OLABISI of the Department of Demography and Social Statistics, Faculty of Social Sciences, carried out a Research on the Topic "**FACTORS ASSOCIATED WITH MATERNAL MORTALITY IN NIGERIA**" in partial fulfillment of the award of Bachelor of Science (B.Sc) in Federal University Oye-Ekiti, Nigeria under my Supervision

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DEDICATION

This project is humbly dedicated to the glory of Almighty God, the Giver of wisdom and knowledge, my strength and my helper you are worthy to be praised.

Also, to my parents Mr. and Mrs. Olujinmi Popoola for their care, understanding and sacrifices they made for me to acquire this certificate despite the challenges.

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ABSTRACT

Maternal mortality is the vital indicator with the greatest disparity between developed and developing countries. The challenging nature of measuring maternal mortality has made it necessary to perform an action-oriented means of gathering information on where, how and why deaths are occurring; what kinds of action are needed and have been taken. A maternal death review is an in-depth investigation of the causes and circumstances surrounding maternal deaths. The objectives of the present study were to examine the factors associated with maternal mortality in Nigeria. The findings showed that majority of people in the North-West region of Nigeria, 336 in number (57.05%), were victims of maternal mortality in Nigeria, while 76 people were victims in the South- south, 19.84%.

With regards to the Univariate analysis, based on the place of residence, majority of maternal mortality occurred in the rural area and least in the urban area. Based on religion, majority of maternal mortality occurred in Christianity. Based on their age, maternal mortality were more in age group 15- 19; based on their marital status, population of those who were married were more; and based on ethnicity, the Hausas were more prone to maternal mortality when compared to other ethnic groups in Nigeria. With regards to the multivariate analysis, age is not associated with maternal mortality in Nigeria; based on religion, people in Islam are more exposed to maternal mortality in Nigeria. This may result from their low level of education. Based on ethnicity, it showed that there is association between ethnicity and maternal mortality in Nigeria.

Based on their occupation, it showed that there is association between maternal mortality and the occupation of respondents in Nigeria; wealth index and parity are associated with maternal mortality of siblings in Nigeria.

KEY WORDS: maternal, mortality, factors and socio- demographic.

CHAPTER ONE

Introduction

1.0 Background of the study

Maternal mortality still remains at the highest point of detrimental events in a woman's life, pregnancy being the last one. Several research and statistics from organizations like WHO, UNICEF, National Demographic and Health Survey (NDHS) have shown that everyday about 90 women of child bearing ages in Nigeria die due to child birth or other pregnancy related complications. Additionally, News Agency Of Nigeria (NAN) of the international statistical classification of diseases says that maternal mortality is seen as an indicator that does not evaluate progress, policy and decisions need to be based on all determinants of maternal mortality such as (social, financial, demographic, biological, cultural) as well as medical interventions.

Adolescents are confronted especially with high risks of maternal mortality. Around the globe, pregnancy is the principle wellspring of death for young women aged 15 – 19, with intricacies from childbirth and unsafe abortions being the major contributory components.

Social and physiological reasons contribute to the fact that young women aged 15 – 19 are twice as likely to die in childbirth as those in their twenties, and girls under 15 are five times as likely to die in childbirth when contrasted with those in their twenties (Paul Hunt and National Population Commission, 2004 & ICF International, 2004).

Complications amid pregnancy and childbirth are the main causes of death, disease and disability amongst women of reproductive age in developing countries. Africa and Asia have the most amazing maternal mortality ratios, there are expansive variations in maternal mortality between women from different economic backgrounds; urban/rural; unmistakable 'races'.

Women mostly at danger of maternal death are older women particularly women over 35 years and older, women in their first pregnancy or who had five or more pregnancies. It was noted that maternal mortality accounted for 32percent of all deaths among women age 15- 49. The maternal mortality rate for the seven- year period preceding the (NDHS) National Demographic Health Survey was 1.05 maternal deaths per 1,000 women- years of exposure. (NDHS, 2013)

World Health Organization (WHO) defines maternal mortality as: The death of a woman while pregnant or within 42days 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 accidental or incidental causes. (UNICEF 2012) This definition allows identification of maternal deaths, based on their causes, as either direct or indirect. Direct maternal deaths are those resulting from obstetric complications of the pregnant state (i.e. pregnancy, delivery and postpartum), interventions, omissions, incorrect treatment, or a chain of events resulting from any of the above. Deaths due to, for example, obstetric hemorrhage or hypertensive disorders in pregnancy, or those due to complications of an aesthesia or caesarean section are classified as Direct maternal deaths.

Indirect maternal deaths are those subsequent from previously existing diseases, or from diseases that developed during pregnancy and that were not due to direct obstetric causes but aggravated by physiological impacts of pregnancy. For example, deaths due to aggravation of an existing cardiac or renal disease are considered indirect maternal deaths (WHO, 2006).

In the same manner, the system of health care delivery cannot be separated from other social system (Harrison, 2004). In most underdeveloped nations, Nigeria inclusive, the economic recession has impressively decreased or in some cases collapsed utilization of hospital services. For instance in Nigeria, more than half of the population has no access to modern health facilities (Alo et al., 2008). Even though the level of antenatal care has increased in many parts of the world during the past decade, it has been reported that only 46 percent of women in low-pay nations benefit from skilled care amid childbirth (Adepoju, 2012). This means that millions of births are not assisted by a mid-wife, a doctor or a nurse. (Adepoju, 2012) further reported that factors like early child marriage, teenage pregnancy, low contraceptives usage, illegal abortion and poverty are major contributory factors to maternal death. It has also been reported that unintended pregnancy resulted in almost 700,000 maternal deaths annually (World Bank, 2010). Other documented factors include social pressure to have many babies, the belief that hospitals are only for complications arising amid pregnancies, unavailability and cost of essential drugs, shortage of specialist (Orubuloye, 1994), administrative delays and clinical mismanagement (Alo et al, 2008).In addition, it has also been documented that women in developing countries have on average many more pregnancies than women in developed countries, and their lifetime risk of death due to pregnancy is higher (WHO, 2012).

Some factors classified to be contributors to maternal mortality includes lack of education, poor sanitation, inaccessibility to effective healthcare services, as well as poor nutrition and there are different factors contributing to maternal mortality and in this study the factors to be considered include, socioeconomic factors, demographic factors.

1.1 Statement of the problem

Globally, there were an estimated 289000 maternal mortality in 2013, a decline of 45% from 1990.The Sub-Saharan Africa region alone accounted for 62% (179000) of global deaths followed by Southern Asia at 24% (69000). At the country level, the two countries that accounted for one third of all global maternal deaths are India at 17% (50000) and Nigeria at 14% (40000). The global maternal mortality ratio in 2013 was 210 maternal deaths per 100000 live births, down from 380 maternal deaths per 100000 live births in 1990. Past efforts to reduce maternal mortality ratio in Nigeria were concentrated on making direct improvement to the health system. Additionally, poor access to and utilization of quality reproductive health services contribute fundamentally to the high maternal mortality level in the nation (Omoruyi, 2008).

The lifetime risk of maternal mortality indicates that 1 in 30 women in Nigeria will have a death related to pregnancy or childbearing (NDHS, 2013). An author argued that efforts to reduce the high maternal mortality ratio in Nigeria have failed. Such efforts had been centered on changing the health system by directly applying expertise and resources on high maternal mortality and its surrounding elements. Maternal mortality is widely acknowledged as a general indicator of the overall health of a population, of the status of women in society, and of the functioning of the health system. Maternal deaths are difficult to investigate because of their comparative rarity on a population basis, as well as other context-specific factors, such as reluctance to report abortion-related deaths, problems of memory recall, or lack of medical attribution. Having examined these, no single source or data collection method is adequate for investigating all aspects of maternal mortality in all settings (WHO, 2006, Harrison 2009).

There are challenges encountered in going through the case files of all maternal deaths that occurred in this region, it is on this note that the study seeks to use the sisterhood information from the NDHS to examine the contributory factors associated with maternal mortality in Nigeria. In these six geo-political zones there are so many Governmental and Non- governmental efforts geared at reducing the maternal mortality. However, despite all these efforts there is still an increase in the rate of maternal mortality in the nation. So many maternal mortality occurred in the rural areas without been reported, this also posed a threat in our society and due to some factors there are more mortality rate compared to the urban centres. Sometimes, quite a number of deaths at the point of birth or during pregnancy occur in the rural area.

This research will investigate the factors that contribute to maternal mortality and it will investigate whether the rate has reduced or not, if yes, what are the factors that contribute to these? And if no, what are the factors that contribute to these?

1.2 Research Questions

The following research questions are employed for this study:

- What is the level of maternal mortality in Nigeria?
- What are the factors associated with maternal mortality in Nigeria?
- What are the perceptions of women about possible factors that may influence maternal mortality in Nigeria? (Key informant)

1.3 Research Objectives

The main objective of the study is to examine the different factors associated with the maternal mortality rate in Nigeria. While the following are the specific objectives:

- To investigate the level of maternal mortality in Nigeria.
- To examine the factors associated with maternal mortality in Nigeria.
- To identify the perception of women about possible factors that may influence maternal mortality in Nigeria (Key informant).

1.4 Significance of the study

It looks at the dreadful effects of maternal mortality in Nigeria; how much money spent to achieve the target of the sustainable development goals (SDGs) in the year 2030 and its prevention strategies in Nigeria. Despite the limited resources in the country, the identification of factors associated with maternal mortality in Nigeria is of paramount importance. There are different factors associated with it which include demographic, social and economic factor to mention but a few. This research is making use of the NDHS data of the sisterhood report to get some information which I was unable to get through the case file of the deceased when using primary method of data collection.

The findings of this study will be beneficial to the ministry of health, HIV/AIDS prevention programme implementers, the government and other stakeholders in the evaluation of the success of

the programme put in place to encourage and educate people on the factors associated with maternal mortality in Nigeria.

Furthermore, it could be used to determine the effectiveness of the strategies and the methods used to inform women on the importance of their health and the health of their unborn child and how to improve their standard of living. To determine how well they are informed on the ways to manage their health and adopt the family planning program which improves the health save them from untimely deaths. This study aims at showing the factors associated with maternal mortality in Nigeria. The information got in the course of this study will be useful to the health sectors and policy makers. It will help in educating the women, especially those at the reproductive ages (15-49) about the factors associated with maternal mortality and how they can protect their health and their unborn children.

This research will contribute to the body of knowledge in that it will add to the studies been conducted in these regions on maternal mortality in Nigeria and improve the understanding of our women on their attitude towards their health and the health of their unborn children. It will enlighten them on the importance of preventing unwanted pregnancies that may lead to maternal mortality and the dangers of self-medication, so as to reduce if not totally eradicate maternal mortality.

1.5 DEFINITION OF TERMS

MATERNAL MORTALITY

Maternal mortality (as cited in International Classification of Disease or ICD-10, WHO, 2007) is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, and can stem from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

LATE MATERNAL MORTALTY

Late maternal mortality refer to deaths caused by direct or indirect obstetric causes more than 42 days but less than one year after the termination of pregnancy.(WHO, 2007).

OBSTETRICLABOUR

An obstetric labour complication is a difficulty or abnormality that arises during the process of labour or delivery.

SEPSIS

It is a life-threatening condition that arises when the body's response to infection injures its own tissues and organs. Common signs and symptoms include fever, increased heart rate, increased breathing rate, and confusion. There may also be symptoms related to a specific infection, such as a cough with pneumonia, or painful urination with a kidney infection. In the very young, old, and people with a weakened immune system, there may be no symptoms of a specific infection and the body temperature may be low or normal rather than high. Severe sepsis causes poor organ function or insufficient blood flow. Insufficient blood flow may be evident by low blood pressure, high blood lactate, or low urine output. Septic shock is low blood pressure due to sepsis that does not improve after reasonable amounts of intravenous fluids are given.

POSTPARTUM

First 6 weeks after childbirth recovery at home during the days and weeks after the delivery of your baby (postpartum period), your body will change as it returns to its no pregnant condition, as with pregnancy changes, postpartum changes are different for every woman.

ECLAMPSIA/ PRE ECLAMPSIA

Eclampsia is the onset of seizures (convulsions) in a woman with pre-eclampsia. Pre-eclampsia is a disorder of pregnancy in which there is high blood pressure and either large amounts of protein in the urine or other organ dysfunction. Onset may be before, during, or after delivery. Most often it is during the second half of pregnancy. The seizures are of the tonic–clonic type and typically last about a minute. Following the seizure there is typically either a period of confusion or coma. Complications include aspiration pneumonia, cerebral hemorrhage, kidney failure, and cardiac arrest. Preeclampsia and eclampsia are part of a larger group of conditions known as hypertensive disorders of pregnancy.

CAESAREAN SECTION

Caesarean section, also known as C-section and other spellings, is a surgical procedure where one or more incisions are made through a mother's abdomen and uterus to deliver one or more babies. A Caesarean section is often performed when a vaginal delivery would put the baby's or mother's life or health at risk. Some are also performed upon request medical need.

WHO: World Health Organization

UNICEF: United Nations Children's Fund

UNFPA: United Nations Population Fund

NDHS: Nigeria Demographic and Health Survey

ICD- 10: International Statistical Classification of Diseases and Related Health Problems, 10th edition

HIV: Human Immunodeficiency Virus

AIDS: Acquired Immune Deficiency Syndrome

EmOC: Emergency Obstetrics Care

CHAPTER TWO

2.1 LITERATURE REVIEW

This section reviews various literatures written on factors associated with maternal mortality in the World, in Sub-Saharan Africa and in Nigeria as a whole. This will be based on the following objectives of my study:

- To investigate the level of maternal mortality in Nigeria.
- To examine the factors associated with maternal mortality in Nigeria.

➢ 2.11 LEVELS OF MATERNAL MORTALITY IN THE WORLD, IN SUB-SAHARAN AFRICA AND IN NIGERIA

An estimated 300,000 women died globally in 2015 as an aftereffect of pregnancy related conditions. Albeit maternal mortality ratios remain elevated in many areas, the maternal mortality ratio has diminished by 1.3 percent per year globally since 1990, with the greatest annualized rate of reduction in developed countries -3.1 percent versus -1.4 percent in developing countries (WHO, 2015).

Globally, reduction in maternal mortality has been attributed to reduction in the total fertility rate, increase in maternal education, and extended access to skilled birth attendants. Other factors associated with maternal mortality reduction incorporate the promotion of policies to reduce anemia and malnutrition, prevent malaria in pregnancy, provide calcium and micronutrient supplementation,

encourage delivery in facilities properly resourced for emergency obstetric care, discourage early motherhood, and reduce unsafe pregnancy termination (WHO, 2015).

The objective of the study conducted on determinants in MMR in Matlab, Bangladesh using 30 years of cohort data (1976-2005) was to determine effective strategies for reduction of maternal mortality through assessment of the contributions of interventions such as skilled attendance at birth. Patterns in MMR and interventions were examined in two adjacent areas over 30 years with analysis of cause of death and socio demographic determinants.

They used routine data collected via household surveys (interviews with families to determine cause of death of women aged 15-49) and health information by international research centre (ICDDR) or by government (HMIS). Female interviewers followed up on all maternal deaths using a verbal autopsy questionnaire and cause of death was assigned by a doctor or medical assistant with classification by direct obstetric causes or indirect causes. A notable fall in MMR over the 30 years was revealed (68% in intervention areas and 54% in government areas), despite the low uptake of skilled attendance at birth. Attribution was related to improved access to EmOC with midwives facilitating access and notable increase in provision of caesarean sections. Overall, they advocated for investment in midwives, EmOC and safe pregnancy termination. Wider socio-economic determinants were also acknowledged, female literacy, improved financial access for the poor; poverty reduction is considered essential to sustain the success achieved according to the authors of this study. The methodology and approach used in the Bangladesh studies acknowledge that wider economic and social determinants had a major influence in reduction of MMR including women's education (Chowdhury et al, 2007).

Another study conducted on policy and programme for maternal mortality in Enugu state, Nigeria. The objective of the study was to describe and analyze the extent to which the state government is

committed to reducing maternal mortality ratio. They employed an in-depths interview and review of the documents in ensuring data on the key issues. The independent variables used were the age of women in reproductive ages and the dependent variable used is the medical factors associated with maternal mortality in the state. Their finding was that maternal mortality ratio for Enugu state approximates (or rather closely) to the national ratio of 1,100 maternal deaths for every 100,000 live births. The major medical causes of deaths in the state are largely preventable (Ibekwe, 2014), and they include severe anaemia, malaria, obstructed labour, unsafe abortion, etc. The results helped to identify residual measures that needed to be put in place to reduce maternal mortality. (Audu LR, Ekele BA, in 2010, NPC 2003, NDHS and Daily Champion Nigeria)

Another one is a study conducted on research journal in organizational psychology and educational studies on maternal mortality data using a case study of Lagos state, Nigeria of the University of Lagos in 2014. The objectives of the study was to examine new strategies for collecting data on maternal deaths, to identify the leading cause of maternal deaths in Nigeria, to identify the factors responsible for poor recording of maternal deaths and to examine the trends of maternal mortality in Nigeria. The dependent variable used is age while the independent variable is the different causes of maternal mortality. The convenience sampling method was used to select one maternity home and three hospitals to form the study sample. And information was obtained through personal interview with both the hospital personnel and women on antenatal visits using structured questionnaires. Due to the specialized nature of the survey, many respondents were unwilling to provide the necessary data due to their religious and cultural beliefs and the leading cause of maternal mortality is hemorrhage. Gaps deduced from the study was that maternal deaths might be attributed to lack of adequate training for the hospital personnel as well as the ignorance of the importance.(Joseph NM, Uche Ibekwe 2014,Deneux- Tharaux.C et al.2005).

➢ 2.12 FACTORS ASSOCIATED WITH MATERNAL MORTALITY IN THE WORLD, IN SUB-SAHARAN AFRICAN, IN NIGERIA

A study was conducted on factors associated with maternal mortality in Sub-Saharan Africa: an ecological study. The objective of the study was to describe and determine different factors associated with maternal mortality ratio in Sub-Saharan Countries. The independent variables used were the education index, sanitary, occupation, gross national income per capita, and the dependent variable used was maternal mortality rate. The method used was an ecological multi-group study which compared variables between many countries in Sub-Saharan Africa using data collected between 1997 and 2006.The findings from this study showed that maternal mortality ratio values in Sub-Saharan Africa were demonstrated to be high and vary enormously among countries. A relationship between the maternal mortality ratio and some educational, sanitary and economic factors were observed. It was discovered that there was an inverse and significant correlation of the maternal mortality ratio with prenatal care coverage, birth assisted by skilled health personnel, access to an improved water source, adult literacy rate, primary female enrolment rate, education index, the gross national income per capita and per capita government expenditure on health. This study concluded that education and an effective and efficient health system, especially during pregnancy and delivery are strongly related to maternal mortality (Jose Luis Alvarez, Ruth Gil, Valentin Hernandez and Agel Gil, 2009).

A study conducted on factors associated with maternal mortality in Africa (Guinea-Bissau), and the objective of the study was to assess demographic and obstetric risk factors for pregnancy related deaths in a multiethnic rural population in a developing country. The independent variables used were ethnicity, age, parity, place of residence and the dependent variable was obstetric risk related to

maternal mortality. The method used was rural areas of Guinea-Bissau; they conducted a prospective survey of women in the fertile age range. More than 15,000women living in 100 clusters were visited within six months intervals over a period of more than six years. An analysis of demographic, environmental and obstetric risk factors for maternal death was performed based on 10,931 prospectively registered pregnancies; 85 of these pregnancies resulted in maternal or late maternal death. And it was found out that in the adjusted model, maternal mortality increased with increasing distance from the regional hospital (odd ratio >25km=7.4, 95% confidence interval: 1.6 -132).Multiple pregnancy was found to increase the risk of maternal death (odd ratio =3.4, 95% confidence interval: 1.3- 7.5). The risk of subsequent maternal death was increased if foetus was stillborn (odd ratio =5.3 (Mamady Chan, 2005), 95% confidence interval: 95% confidence interval: 2.8- 9.4). Women living in the region of Gabu had higher mortality than those living in Biombo (odd ratio = 2.5, 95% confidence interval 1.3- 5.1). No categories of age or parity were associated with an increased risk of maternal mortality. Predictive values did not exceed 3% for any of the category of the significant risk factors. It was concluded that for the purpose of reducing maternal mortality the screening approach of antenatal care is of limited value; age and parity should not be used routinely as selection criteria for transfer of otherwise healthy pregnant women to higher- level health institutions. It was also concluded that twin pregnancy seems to be the only operational risk factor identified in this study; that stillbirth is associated with an increased risk of maternal mortality, and that the distance to emergency obstetric care (EOC) may determine the outcome of a complicated delivery. (Hoil, da Silva D. , Hedeqaard K, Sandstrom A, Aaby P. July, 2002).

Another is a qualitative study conducted on maternal mortality in the rural Gambia on access to emergency obstetric care which was to describe the sociocultural and health service factors associated with maternal mortality in rural Gambia. The independent variables used are age and religion while

the dependent variable used is health care services. The method used was the reviewed of cases of 42 maternal deaths of women who actually tried to reach or have reached health care services. Also, a verbal autopsy techniques was applied for 32 of the cases, key people who had witnessed any stage during the process leading to death were interviewed, health care staff who participated in the provision of care to the deceased was also interviewed and the findings from this study was that women do seek access to care for obstetric emergencies but because of a variety of problems encountered, appropriate care is often delayed. Disorganized healthcare with lack of prompt response to emergencies is a major factor contributing to a continued high maternal mortality rate in Gambia. (Mamady Cham, Johanne Sundby Abou Zahr C, Royston E, 2005).

Another study conducted in Northern Nigeria on maternal mortality in Nigeria: a population- based study with the objective of determining the incidence and causes of maternal mortality as well as its temporal distribution over the last decade (1990-1999). The independent variables used were their ethnicity, place of residence, and the dependent variable used was the cause of death. The method employed in this study was to collect and record all maternal deaths within the study period in the state of Kano, Northern Nigeria. It was found out that a total of 4145 deaths occurred among 171621 deliveries, yielding a maternal mortality ratio of 2420 deaths per 100,000. Eclampsia, ruptured uterus and aneamia were responsible for about 50% of maternal deaths and it was concluded that maternal mortality could be reduced by half at study site with effective interventions targeted to prevent deaths from eclampsia, ruptured uterus and aneamia. (Yusuf M. Adamu, Hamisu M. Salihu, Nalini Sathiakumar, Greg R. Alexander, VOL.109, 2003).

Another survey is on the lancet journals conducted on the maternal mortality in adolescents compared with women of older age's evidence from 144 countries. The objective of the study was to know an

increased risk of death during pregnancy or child birth in adolescents compared with older women. The independent variable used was age while the dependent variable used was the proportion of maternal deaths. Data was collected from 144 countries and territories (65 with vital registration data and 79 with nationally represented survey data) to calculate the proportion of maternal deaths among females of reproductive ages for each 5- year age group from 15-19 and 45-49years.The finding was that aggregated data show a J- Shaped curve for the age distribution of maternal mortality with a slightly increased risk of mortality in adolescents compared with women aged 20-24 years, maternal mortality ratio of 260 and the finding suggest that the excess mortality risk to adolescent and mothers might be less than previously believed, and in most countries the adolescent maternal mortality ratio is low compared with women older than 30years (Dr. Andrea Nove PhD, Prof. Zoe Matthews PhD and others in 2014, WHO, UN Population funds).

A study conducted in Ekiti State University Hospital, Ado- Ekiti, Ekiti State, Nigeria on ruptured tubal pregnancy: predictors of delays in seeking and obtaining care in Nigerian population has an objective of examining the morbidity and mortality rate from ruptured tubal pregnancies (RTPs) and its link with delays in seeking and receiving care. The dependent variable used was those who had delays in seeking care, and the independent variables used were place of residence, age, level of education of the respondents. The method used was a retrospective review of case records of women with tubal pregnancies managed at the Ekiti state University Teaching Hospital Ado- Ekiti, Ekiti State, Nigeria where clinical and sociodemographic parameters were obtained, including information on onset of symptoms and intervals between the symptoms and when help was sought and obtained at the hospital. From the finding from the study, it was concluded that RTPs are common gynecological emergencies in our environment that are often associated with delay in seeking help and obtaining care. It was deduced that efforts should be geared toward women's education and financial independence,

improved hospital accessibility and better diagnostic skills. It was also concluded that absence of formal education and residence in rural areas predict the delay in seeking medical attention (Jacob O. Awoleke, Abiodun I. Adanikin and Adeola O. Awoleke, 2015).

Viral hepatitis during pregnancy is associated with a high risk of maternal complications, has a high rate of vertical transmission causing foetal and neonatal hepatitis and has been reported as a leading cause of maternal mortality in Ekiti State. (Dafallah S.E et al., 2003, Department of Medicine, Ekiti-State University Teaching Hospital, Ado- Ekiti, Nigeria ,Department of Obstetrics & Gynecology, Ekiti-State University Teaching Hospital, P.M.B 5355, Ado-Ekiti, Nigeria. Department of Surgery, Ekiti-State University Teaching Hospital, P.M.B 5355, Ado- Ekiti, Nigeria, Department of Hematology & Blood transfusion, Ekiti State University, Ado – Ekiti, Nigeria. 2013).

Another one is a study conducted on reducing maternal mortality in a low resource setting in Nigeria. The objective of the study was to assess the impact of the adoption of evidence based guidelines on maternal mortality reduction at Enugu state teaching hospital, Nigeria. The independent variables used were the age, parity, marital status, educational status, and the dependent variable used was the causes of death. The method used in the study was to retrieve the case files of all maternal deaths from the medical records of the department. The findings identified from the study was that eclampsia and post-partum hemorrhage are the two most common causes of maternal deaths, although with the improvement in maternal care in institution, the maternal mortality ratio is still very high, almost 36times higher than the average, huge gap in the quality of care between the developing and developed countries (EC Ezugwu, PU Agu and others WHO, 2012 NDHS 2008).

The study conducted on temporal analysis of maternal mortality in Kano State, Northern Nigeria a six year review was to determine the incidence of maternal mortality associated with non- utilization of

obstetric services and how socio- demographic and medical factors influence the deaths of pregnant women. Independent variables used were hospital records on live births, antenatal attendance, age at death, parity, educational level, and dependent variable use was the cause of death. The method used was to conduct a retrospective study of the hospital data collected between year 2005 to 2010 from thirty referred and general hospital in both rural and urban areas. They reviewed the case files records of all live deliveries, antenatal attendance, captured maternal death, age at death, parity and educational level. The finding indicated that in urban areas there are generally high antenatal attendance compare with rural areas. This study also revealed that the higher a woman's level of western education the less likely that she will die a maternal death. (Yar' Zever S. Ibrahim, 2010, NDHS, Assessment of DHS maternal mortality indicators studies in family planning, 2008; 31:111-123).

Another research conducted by the Nigerian Journal of Medicine on maternal mortality in the University of Port – Harcourt Teaching Hospital examined the causes of high increase in maternal mortality in developing countries, especially in the university of Port Harcourt Teaching hospital. Independent variables used were the level of education and age while the dependent variable used was the causes of maternal deaths. The method used was to collect data from case notes of all maternal deaths. The finding from this research showed that severe pre- eclampsia/ eclampsia, haemorrhage and sepsis were the major causes of death in University of Port- Harcourt teaching hospital. It also showed that maternal death is usually multifactorial and drew our attention to the lethal danger of lack of antenatal care associated with severe pre- eclampsia/ eclampsia (S.A. Uzoigwe and C. T. John, 2004, Harrison K. A. by safe motherhood initiative, Nigeria).

Another one is a study conducted in a population- based qualitative study, in two urban and two rural communities in Borno state, Nigeria. The objective of the study was to find out community's

knowledge and perceived implications of maternal mortality as well as the community members' perception on ways to prevent the scourge. The method used was focus group discussions. The study showed that maternal mortality is common and well known in the communities studied and that the implications are well known. The study also revealed that the communities perceived the causes of maternal death to be medical, cultural and socio-economic, but that there were serious misconceptions with dire consequences for maternal mortality (Mairiga et al. 2008).

2.2 THEORECTICAL FRAMEWORK

Theoretical framework for analyzing these determinants was devised by McCarthy and Maine, 1992 According to this framework, all determinants of maternal mortality must operate through a set of intermediate or proximate determinants. The distant determinants include Socioeconomic and cultural factors and can be classified into three categories: women's occupation or other family members', income and property and community's status including community infrastructure, services and aggregate wealth. The intermediate determinants can be classified into factors belonging to four categories:

a) Health status factors, e g nutrition, infectious and parasitic diseases. Other chronic conditions such as diabetes, hypertension and previous history of pregnancy complications.
b) Reproductive status factors, e.g. age, mental status and parity.
c) Access to health services which includes location and cost; access to information about the service, range of services and their quality.
d) Health care behavior and use of health services which include the use of family planning, prenatal care, modern delivery care, illegal induced abortion and harmful traditional practices.

Through the interaction of all these factors, as well as other unpredictable factors, the outcomes could be either uncomplicated pregnancy and childbirth, or the occurrence of complications. However, the possible occurrence of maternal death results from how these complications are dealt with.

Also, Thaddeus and Maine characterized three notable delays ("3 delays") under the theoretical framework of maternal mortality in resource-poor nations which include: delay in the decision to seek care, delay in reaching care in time, and delay in receiving adequate treatment. The first delay is on the part of the mother, family, or community's inability to recognize a life-threatening condition. Because most deaths occur during labour or in the first 24 hours postpartum, recognizing an emergency is not easy. Most births occur at home with unskilled attendants, whereas, it takes skill to predict or prevent bad outcomes and medical knowledge to diagnose and immediately act on complications. By the time the lay midwife or family realizes there is a problem, it is usually too late.

The second delay is in reaching a health-care facility, which may be due to road conditions, lack of transportation, or location. Many villages do not have access to paved roads and many families do not have access to vehicles. Public transportation (or animals) may be the main means of transportation. This means it may take hours or days to reach a health-care facility centre. Women with life-threatening conditions often do not make it to the centre in time.

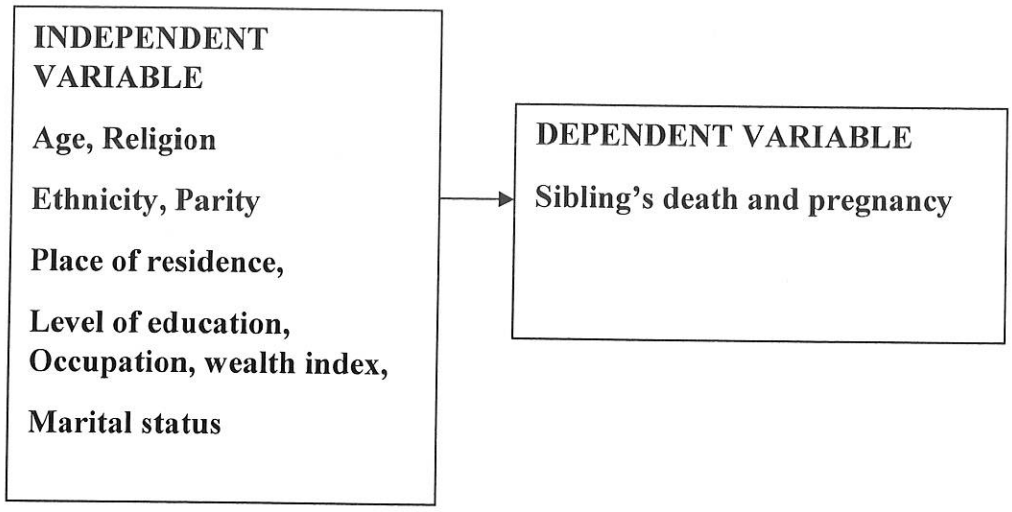
The third delay occurs at the healthcare facility centres. Upon arrival, women receive inadequate care or inefficient treatment. Resource-poor nations with fragile health-care facilities may not have the technology or services necessary to provide critical care to hemorrhaging, infected, or seizing patients. Omissions in treatment, incorrect treatment, and a lack of supplies contribute to maternal mortality.

2.3 CONCEPTUAL FRAMEWORK

This conceptual framework on the causes of maternal deaths shows that health outcomes are determined by interrelated factors which include encompassing nutrition, water, sanitation and hygiene, health-care services. Another factor is the woman's status in the family such as her education, occupation, income and autonomy; and her status in the community which include such variables as education and healthy behaviours, and disease control, among others.

These factors are defined as proximate (individual), underlying (household, community and district) and basic (societal). Factors at one level influence other levels. The framework is devised to be useful in assessing and analyzing the causes of maternal mortality, and in planning effective actions to enhance maternal health. Source: (UNICEF)

2.31 CONCEPTUAL FRAMEWORK



2.4RESEARCH HYPOTHESIS

H_i: Socio-economic, demographic and cultural characteristic of female siblings are likely to be associated with maternal mortality in Nigeria.

CHAPTER THREE

RESEARCH METHODLOGY

3.0 INTRODUCTION

In this chapter, the plan and approach used to carry out the research work is being explained. It consists of the Background of the Study, Target Population, Sample Design and Sample Size, Sources of Data, Data Collection Methods and Methods of data analysis.

3.1 BACKGROUND OF THE STUDY AREA

Nigeria is located in Western Africa, and borders the Gulf of Guinea, between Benin on the west and Cameroon on the east. It has a compact area of 923,768 square kilometers (356,376 square miles). The country's land mass extends from the Gulf of Guinea in the south to the Sahel (the shore of the Sahara Desert) in the north. Comparatively, Nigeria is slightly more than twice the size of California. Abuja, the capital city of the Federal Republic of Nigeria, replaced the former capital city, Lagos, in December 1991, because of its more central location, among other reasons. Nigeria is made up of six geopolitical zones namely; North Central States: Kogi, Niger, Benue, Kwara, Plateau, Nassarawa and the Federal Capital Territory, North-Eastern States: Taraba, Borno, Bauchi, Adamawa, Gombe and Yobe State, North-Western States: Kaduna, Kebbi, Zamfara, Sokoto, Kano, Jigawa and Katsina State, South-Eastern States: Ebonyi, Enugu, Imo, Abia and Anambra State, South-Southern States: Akwa-Ibom, Bayelsa, Edo, Cross River, Rivers and Delta State, South-Western States: Oyo, Ogun, Lagos, Ondo and Osun State.

3.2TARGET POPULATION

The study population, according to the Nigeria Demographic and Health Survey (NDHS), was women of reproductive ages (15- 49) in Nigeria.

3.3 SAMPLE DESIGN AND SAMPLE SIZE

3.31 SAMPLE DESIGN

The NDHS (2013) was nationally represented and covered the entire population residing in non-institutional dwelling units in the country. The survey used as sampling frames the list of enumeration areas (EAs) prepared for the 2006 Nigeria population census. The sample provided population and health indicator estimates at the national, zonal, and state levels.

All women age 15-49 who were either permanent residents of the households in the 2013 NDHS sample or visitors present in the households on the night before the survey were eligible to be interviewed.

All women age 15- 49 from permanent residents of the individual in the 2013 NDHS sample or siblings of the deceased present in the households on the night on the day of the survey were interviewed.

3.32 SAMPLE SIZE

All women age 15- 49 from permanent residents of the individuals in the 2013 NDHS who were victims of maternal mortality as reported by their sisters were 966. While those who experienced non-

maternal mortality as being reported by their sisters were 1846, making a total of 2812 respondents in these six geo-political zones.

3.33 Measurement of Variables

❖ **Independent Variable**

- Age
- Marital status
- Level of education
- Ethnicity
- Religion
- Place of residence
- Occupation
- Wealth index
- parity

❖ **Dependent Variable**

- Siblings death and pregnancy

3.4 SOURCE OF DATA

This study would make use of both qualitative and quantitative approach of data collection to achieve the research objectives. For the quantitative approach, secondary data analysis will be done using 2013 Nigeria Demographic and Health Survey (NDHS) data. While the qualitative research interviewed key

informant (KII) who give information about their perception on factors associated with maternal mortality.

3.5 METHOD OF DATA ANALYSIS

The data of this survey was analyzed using STATA 12, at Univariate, Bivariate, and Multivariate levels of analysis to achieve the objectives of the study. The association between the dependent variable (siblings death and pregnancy) and the socio-demographic characteristics were examined using the odds ratio at P-value of <0.05 and 95% confidence interval.

At the Univariate level of analysis, the frequency and percentage distribution of selected respondents' background variables were generated.

However, to achieve the first objective, percentage distribution was done to show the levels of maternal mortality among respondents.

Bivariate analysis would be using chi square test. Chi-square test of statistics would be used to test the influence of socio-demographic and economic characteristics on the outcome variable (sibling death and pregnancy). Socio-demographic and economic factors that were significantly associated with maternal mortality among women of reproductive age (15- 49), at multivariate level of analysis, the logistic regression would be use to highlight factors associated with maternal mortality to achieve the general objective.

The qualitative study uses the key informant method and use the thematic method of data analysis to report their perception about the factors associated with maternal mortality in Nigeria.

3.6 ETHICAL CONSIDERATION

Ethical approval was obtained from federal government of Nigeria Ethics Committee, Ministry of Health. Verbal informed consent was duly sought and obtained from research participant who take part in the study. The research participants were assured of confidentiality of information elicited

CHAPTER FOUR

4.1: Distribution of Respondents by Socio-demographic Characteristics by percentage

VARIABLES	FREQUENCY	PERCENTAGE
Deaths		
NON MATERNAL DEATH	1,846	65.65
MATERNAL DEATH	966	34.35
TOTAL	**2812**	**100.00**
REGIONS		
North Central	420	14.94
North East	661	23.51
North West	589	20.95
South East	341	12.13
South South	383	13.62
South West	418	14.86
TOTAL	**2,812**	**100.00**
PLACE OF RESIDENCE		
Urban	1,124	39.97
Rural	1,688	60.03
TOTAL	**2,812**	**100.00**
AGE		
15-19	192	6.82
20-24	301	10.69
25-29	428	15.20
30-34	456	16.19

35-39	475	16.87
40-44	468	16.62
45-49	496	17.61
TOTAL	**2816**	**100.00**
MARITAL STATUS		
Never married	325	11.54
Living with partner	58	2.06
Widowed	119	4.23
Divorced	44	1.56
Separated	56	1.99
Married	2.214	78.62
TOTAL	**2,816**	**100.00**
RELIGION		
Christian	1,510	53.81
Islam	1,269	45.22
Traditionalist	27	0.96
Total	**2,806**	**100.00**
ETHNICITY		
Fulani/Hausa	762	27.10
Igbo	420	14.94
Yoruba	352	12.52
Others	1,278	45.45
TOTAL	**2,812**	**100.00**
LEVEL OF EDUCATION		
No education	1,006	35.78
Primary	677	24.08
Secondary	856	30.44
Higher	273	9.71

TOTAL	**2,812**	**100.00**
WEALTH INDEX		
Poor	1,040	36.98
Middle	599	21.30
Rich	1,173	41.71
TOTAL	**2,812**	**100.00**
OCCUPATION		
Not working	662	23.68
Working	2,134	76.32
TOTAL	**2,796**	**100.00**
PARITY		
Less than 5	2,155	76.64
6- 10 children	645	22.94
11 and above	12	0.43
Total	**2,812**	**100.00**

SOURCE: NDHS 2013

The percentage distribution of the respondents (sisters of the deceased) revealed that the larger proportion of the death, about 65.65%, occurred as a result of non-maternal causes, while 34.35% occurred as a result of maternal causes.

The percentage distribution of place of residence revealed that the larger proportion of the women, about 60.03%, resided in the rural area while 39.97% resided in the urban area.

It was discovered that 6.82% of them belong to the age group 15-19, 10.69% of them belong to the age group 20-24, 15.20% belong to the respondents age group 25-29, 16.19% belong to the age

group 30-34, 16.87% belong to ages 35-39 years, 16.62% belong to the age group 40-44 and 17.61% belong to ages 45-49 years.

Also, the percentage distribution of the respondent according to the religion revealed that 53.81% of them were Christian, 45.22% practiced Islam, while 0.96% were traditional worshippers

In the above percentage distribution of the respondents, with regard to their marital status, showed that the largest proportion 78.62% of the respondents were married, 11.54% are single, while those who are Cohabiting, Widowed, Divorced and Separated are 2.06%, 4.23% 1.56% and 1.99% respectively.

Also, percentage distribution of the respondent's ethnicity showed that 27.10% of the respondents were Hausa/Fulani, 14.94% Igbo, 12.52% Yoruba while 45.45% belong to other ethnic groups.

The percentage distribution of the respondent level of education showed that most of the sample population, about 35.78%, had no education, 30.44% have secondary education, only 24.08% have primary education and 9.71% higher education.

The percentage distribution of wealth status indicated that 41.71% were rich, 21.30% were middle class while 36.98% were classified as poor.

The distribution also showed that the majority of the respondents were working (76.32%) while only 23.68% were not working.

The percentage distribution of the respondent according to their parity revealed that the greater proportion of them (76.64%) had less than 5 children, 22.94% had 6-10 children while 0.43% had 11 children and above

TABLE 4.2 Table of Relationship Showing the Variables of maternal mortality

VARIABLES	NON MATERNAL DEATH	MATERNAL DEATH	TOTAL
REGIONS			
North Central	285(67.86)	135(32.14)	420(100.00)
North East	422(63.84)	239(36.16)	661(100.00)
North West	336(57.05)	336(57.05)	589(100.00)
South East	248(72.73)	93(27.27)	341(100.00)
South South	307(80.16)	76(19.84)	383(100.00)
South West	331(79.19)	87(20.81)	418(100.00)
Total	**1,846(65.65)**	**966(34.35)**	**2,812(100.00)**
Pearson chi2(5) =	**213.6756 Pr =**	**0.000**	
AGE			
15-19	121(63.02)	71(36.98)	192(100.00)
20-24	182(60.47)	119(39.53)	301(100.00)
25-29	282(66.35)	143(33.65)	425(100.00)
30-34	303(66.45)	153(33.55)	456(100.00)
35-39	320(67.37)	155(32.63)	475(100.00)
40-44	316(67.52)	152(32.48)	468 (100.00)
45-49	322(65.05)	173(34.95)	495(100.00)
Total **Pearson chi2 (6)= 58259 Pr= 0.443**	**1,846(65.65)**	**966(34.35)**	**2,812** (100.00)
RELIGION			
Christian	1,153(76.46)	355(23.54)	1,508(100.00)
Islam	669(52.80)	669(52.80)	1,267(100.00)

Traditionalist	18(66.67)	9(33.33)	27(100.00)
Total	**1,840(65.67)**	**962(34.33)**	**2,802(100.00)**
Pearson chi2 (2) =170.9260 Pr = 0.000			
WEALTH INDEX			
Poor	571(54.90)	469(45.10)	1,040 (100.00)
Middle	404(67.45)	195(32.55)	599 (100.00)
Rich	871(74.25)	302(25.75)	1,173 (100.00)
Total	**1,846(65.65)**	**966(34.35)**	**2,812** (100.00)
Pearson chi2 (2) = 92.6174 Pr = 0.000			
OCCUPATION			
Not working	424(64.05)	238(35.95)	662 (100.00)
Working	1,412(66.17)	722(33.83)	2,134 (100.00)
Total	**1,836(65.67)**	**960(34.33)**	**2,796** (100.00)
Pearson chi2 (1) = 1.0058 Pr = 0.316			
LEVEL OF EDUCATION			
No education	506(50.30)	500(49.70)	1,006(100.00)
Primary	486(71.79)	191(28.21)	677(100.00)
Secondary	642(75.00)	214(25.00)	856(100.00)
Higher	212(77.66)	61(22.34)	273(100.00)
Total	**1,846(65.65)**	**966(34.35)**	**2,812**(100.00)
Pearson chi2 (3) = 167.0719 Pr = 0.000			
PARITY			
Less than 5	1,442(66.91)	713(33.09)	2,155 (100.00)
6-10 children	397(61.55)	248(38.45)	645 (100.00)
11 and above	7(58.33)	5(41.67)	12(100.00)

Total	**1,846(65.65)**	**966(34.35)**	**2,812(100.00)**
Pearson chi2 (2) =6.6189 Pr = 0.037			
ETHNICITY			
Fulani/Hausa	341(44.75)	421(55.25)	762(100.00)
Igbo	313(74.52)	107(25.48)	420 (100.00)
Yoruba	272(77.27)	80(22.73)	352 (100.00)
Others	920(71.99)	358(28.01)	1,278 (100.00)
Total	**1,846(65.65)**	**966(34.35)**	**2,812**(100.00)
Pearson chi2 (3) =206.0963 Pr = 0.000			
MARITAL STATUS			
Never in union	231(71.30)	93(28.70)	324 (100.00)
Married	1,412(63.86)	799(36.14)	2,211(100.00)
Living with partner	49(84.48)	9(15.52)	58(100.00)
Widowed	85(71.43)	34(28.57)	119(100.00)
Divorced	27(61.36)	17(38.64)	44(100.00)
Separated	42(75.00)	14(25.00)	s14(25.00)
Total	**1,846(65.65)**	**966(34.35)**	**2,812** (100.00)
Pearson chi2 (5) = 21.1259 Pr = 0.001			

Source: authors' work, 2016(data from the 2013 NDHS)

HYPOTHESIS I

H_i: Socio-economic, demographic and cultural characteristic of female siblings are likely to be associated with maternal mortality in Nigeria.

CRITICAL REGION: At 0.05 level of significance, Reject H_1 if P-value > 0.05. Hence, accept if otherwise

DECISION: The calculated p-value from the chi-square test of association for socio-economic factors showed significant relationship with maternal mortality; $X^2 = 167.07$, $p = 0.00$ for level of education, ($X^2 = 92.61$, $p = 0.00$) for wealth index, but the relationship with occupation was insignificant ($X^2=1.01$, $p<0.05$) . Looking at the socio-demographic characteristic, it showed that marital status and parity influences maternal mortality in Nigeria with ($X^2 = 21.13$, $p<0.01$) and ($X2 = 6.62$, $p<0.05$) respectively, while age showed no significant relationship with maternal mortality. ($X2 = 5.83$, $p>0.05$)

The socio-cultural factors showed that religion and ethnicity significantly influenced maternal mortality in Nigeria with the ($X^2=170.93$, $p=0.00$) and ($X^2=206.09$, $p=0.00$) respectively, therefore: We accept Hi

MULTIVARIATE ANALYSIS

The binary logistic regression analysis is performed to determine the relative importance of the different categories of the independent variables in relation to maternal mortality which is the dependent variable.

TABLE 4:5 LOGISTIC REGRESSIONS PREDICTING MATERNAL MORTALITY

Variable	**95% CI**			
	OR	**Lower**	**Upper**	**p -value**
AGE				
15-19(RC)	**1.0**			
20-24	1.2	.78	1.78	0.43
25- 29	.93	.61	1.42	0.74
30-34	.92	.60	1.42	0.73
35- 39	.84	.54	1.31	0.44

40-44	.84	.54	1.32	0.45
45-49	.86	.54	1.35	0.52
RELIGION				
Christian(RC)	**1.0**			
Islam	1.59	1.24	2.05	0.00
Traditionalist	1.10	.48	2.53	0.81
MARITAL STATUS				
Single (RC)	**1.0**			
Married	.91	.65	1.28	0.60
Cohabiting	.51	.23	1.15	0.11
Widowed	.93	.55	1.59	0.80
Divorced	.95	.46	1.95	0.89
Separated	.88	.44	1.75	0.71
ETHNICITY				
Fulani/Hausa (RC)	**1.0**			
Igbo	.64	.44	.91	0.01
Yoruba	.49	.35	.70	0.00
Others	.55	.43	.71	0.00
LEVEL OF EDUCATION				
No education(RC)	1.0			
Primary	.67	.52	.86	0.00
Secondary	.65	.48	.86	0.00
Higher	.62	.42	.93	0.02
WEALTH INDEX				

Poor (RC)	**1.0**			
Middle	.89	.70	1.12	0.31
Rich	.85	.66	1.09	0.20
OCCUPATION				
Not working (RC)	**1.0**			
Working	1.24	1.00	1.54	0.04
PARITY				
Less than 5 (RC)	**1.0**			
6-10	1.07	.86	1.33	0.56
11+	.95	.29	3.17	0.94

Source: NDHS 2013 RC: Reference Category

The likelihood ratio of the logistic regression in the table above revealed that age did not contribute to the likely maternal mortality in Nigeria. Taking 15-19 as a reference point (1.00). Also the likelihood ratio of the logistic regression in the table above revealed that religion contributes to the likely maternal mortality in Nigeria. Taking Christian as a reference point (1.00), Islam was 59% more likely to influence maternal mortality in Nigeria and traditionalist were more likely to influence maternal mortality in Nigeria with(OR=1.59,p>0.05) and (OR=1.11,p=0.00).

Marital status contributes to maternal mortality in Nigeria. Taking the singles as a reference category (1.00), the married, cohabiting, widowed, divorced and separated people were insignificantly less likely to have female siblings who died of maternal causes.

Level of education contributes to the likely maternal mortality in Nigeria. Taking no education as a reference point (1.00), primary, secondary and higher education were less likely to influence maternal

mortality significantly in Nigeria. Respondents who attended primary education were 33% less likely to have female siblings who are victims of maternal mortality; those who attended secondary education were 36% less likely and those who have higher education were 38% less likely.

Logistic regression result revealed that wealth index contributes to maternal mortality in Nigeria. Taking the poor quintile as a reference category (1.00), the middle and the rich quintile were less insignificant likely to influence maternal mortality in Nigeria.

Occupation also influences the likelihood of maternal mortality in Nigeria. The result revealed that women who worked were significantly less likely to have a sibling who died of maternal cause in Nigeria.

The results revealed that parity did not contribute significantly to maternal mortality. In taking less than 5 children as a reference category (1.00), the 6-10 children were more likely to significantly influence maternal mortality, while11 and above children were less likely to influence maternal mortality in Nigeria.

Ethnicity also contributes to the likely maternal mortality in Nigeria. Taking Fulani/Hausa as the reference category (1.00), 37% Igbo were less likely to have sibling who died of maternal cause in Nigeria; 51% Yoruba ethnic group were significantly likely to have a sibling who died of maternal cause in Nigeria.

PERCEPTION ABOUT CONTRIBUTORY FACTORS TO MATERNAL MORTALITY IN NIGERIA

QUALITATIVE ANALYSIS

For this study, the total of six women age 15-49 years who were medical personnel were interviewed on their perceptions about contributory factors to maternal mortality in Nigeria. The analysis of the interview was done in line with the key informant questions.

Socio-demographic characteristics of the respondents

Three of the respondents were in the age group of 40-44 years, one respondent in age group 49 and above, while the others were in the age group of 25-29. Four of them were nurses, while the two were health worker. With regards to their religion, all of them were Christian. All of them had higher education. With regards to their place of residence, three of the respondents were from urban area while three of the respondents were from the rural area. Five of the respondents had 0-4 living children, while one had 7 living children.

1. **What is your opinion about the level of cases of maternal mortality in your area?**

The respondent explains her opinion about the level of cases of maternal mortality thus:

> *Ignorance, most women are not aware of place to go concerning their health matters. Also religious beliefs, they believe in the word "there is nothing God cannot do "some believe in not taking drugs up till now people still think they can go to the mission house or traditional birth attendants. They don't bother going for antenatal and this is common in the rural area because they think they can*

*give birth themselves (*RES 4, *25 years, Rural, Tertiary, no child, Christianity, Health worker*).

2. **Despite clinic attendance during pregnancy, can women still die from pregnancy and delivery cause? Why?**

Respondents explain that women can still die from pregnancy and delivery cause after clinic attendance during pregnancy and they explained thus:

"Yes, because some people still believe the norms and culture of their environment after going through the an (WHO, March, 2014)*tenatal lectures due to the influence of their mother in- law they will still take herbs and other concoction".(RES 2,53years,Rural, Tertiary, 7children, Christianity, Nurse)*

"Yes, the reason is that is not all of those that normally yields to correction , they may be saying that ,"what do the nurse know" so many say if I don't attend the clinic I will give birth safe and sound that nothing will happen to them".(RES 4, *25 years, Rural, Tertiary, no child, Christianity, Health worker*)

3. **What are the factors responsible for maternal related mortality?**

Different Interviewers explain their perception about the contributory factors responsible for maternal mortality and this was one of the responses of my respondent as she explained thus:

We don't have the causes of maternal Mortality but we have predisposing factors, that is Factors that make women to fall victims of maternal mortality these factors include age, anyone below age 18 years and above 35 years can fall victims of this, another thing is multiparity i.e. if the woman is carrying more than one child at

that pregnancy. Then there is another thing called multiparous i.e. women who has given birth more than four times can fall victim what happen in that case is that the reproductive system is very weak and thus, may cause bleeding which can lead to maternal death in subsequent pregnancy. Also, refusal of clients complying with medical attention, there are some women who find it difficult to yield to medical attention and advice. Lack of required medical equipment in health facilities e.g. lack of equipment to offer emergency caesarean operation and this can cause maternal mortality. Paucity of funds on the parts of the clients and insufficient preparedness for delivery and pregnancy some do not prepare for emergency, late registration of booking, some even do not book at all. Lastly, incompatibility issues among partners i.e. result incompatibility (genotype & blood group) (RES 1, Urban, 27years, No child, Christianity, Tertiary, a qualified nurse)

4. **What are the efforts of the government in addressing maternal mortality in Nigeria? Have they been effective?**

"The government is really trying their best because day in day out there has been jingles on the radios, television, etc. they have brought some services in addressing this issue to the grassroots doorstep".(RES 2,53years,Rural, Tertiary, 7children, Christianity, Nurse)

4.7 DISCUSSION

The main objective of this study was to highlight factors associated with maternal mortality in Nigeria. The study specifically aimed at investigating the level of maternal mortality in Nigeria; the relative influence of socioeconomic, demographic and cultural characteristics of female siblings of the deceased, and to understand the perception of women about possible factors that may influence maternal mortality.

The findings showed that majority of people in the North-West region of Nigeria, 336 in number (57.05%), were victims of maternal mortality in Nigeria, while 76 people were victims in the South-south, 19.84%.

With regards to the Univariate analysis, based on the place of residence, majority of maternal mortality occurred in the rural area and least in the urban area. Based on religion, majority of maternal mortality occurred in Christianity. Based on their age, maternal mortality were more in age group 15- 19; based on their marital status, population of those who were married were more; and based on ethnicity, the Hausas were more prone to maternal mortality when compared to other ethnic groups in Nigeria.

With regards to the multivariate analysis, age is not associated with maternal mortality in Nigeria; based on religion, people in Islam are more exposed to maternal mortality in Nigeria. This may result from their low level of education. Based on ethnicity, it showed that there is association between ethnicity and maternal mortality in Nigeria. Based on their occupation, it showed that there is association between maternal mortality and the occupation of respondents in Nigeria; wealth index and parity are associated with maternal mortality of siblings in Nigeria.

With respect to the report from the key informant respondent, we were able to know some factors that made women fall victims of maternal mortality in Nigeria. These factors include age, multiparity, grandmultiparous, lack of medical, refusal of clients complying to medical attention, Paucity of funds and late booking and registration.

CHAPTER 5

SUMMARY, CONLUSION AND RECOMMENDATION

5.0. Introduction

This chapter presents the summary of what was analysed in chapter 4, and based on the findings, conclusion and recommendations were made

5.1. SUMMARY

The main objective of this study was to highlight factors associated with maternal mortality in Nigeria. The study was based on the sample size of 2812 women of reproductive ages and six key informant respondents were used. The study specifically aimed at investigating the level of maternal mortality in Nigeria; the relative influence of socioeconomic, demographic and cultural characteristics of female sibling on maternal mortality; to identify the perception of women about possible factors that may influence maternal mortality in the study area, and to test the association of socio-demographic, socio-economic and cultural factors (age, occupation, religion, wealth index, place of residence, ethnicity, parity and level of education) on maternal mortality.

The Univariate table findings clearly revealed that majority were in the age group 15- 19 forming 20.30%, with the age group 45- 49 having the least percentage of 9.13% . It was shown from the place of residence that majority of people in the rural area which make 60.09% were more prone to maternal mortality than people residing in the urban centres which had the least percentage of 39.91%. The table also showed that the ethnic group majorly affected by maternal mortality was Hausa which had 30.37%, while the Igbo had the least percentage of 14.01%.

The Bivariate analysis was done using chi-square statistics. In testing the association of socio-demographic, socio- economic and socio- cultural characteristics with maternal mortality, the p-value showed that there is significant relationship between socio- demographic characteristics (marital status, parity) and maternal mortality; but age is not significant because p- value is greater than 0.05. For socio- economic characteristics, there is association between level of education and wealth status and maternal mortality in Nigeria. Also, for socio- cultural characteristics, there is an association between religion and ethnicity and maternal mortality in Nigeria.

Binary logistic regression was used at multivariate level of analysis and it was revealed that age contributed to the likely maternal mortality in Rural Nigeria. Also, it was revealed that wealth index contributed to maternal mortality in Nigeria. The study also revealed that parity contributed to maternal mortality in Nigeria.

5.2 CONCLUSION

Factors associated with maternal mortality in Nigeria had been revealed in this study, they include: wealth index, parity, ethnicity, religion, occupation, and level of education, to mention but a few. With respect to the report from the key informant respondent, we were able to know some factors that made women fall victims of maternal mortality in Nigeria. These factors include; age, multiparity, grandmultiparous, lack of medical, refusal of clients complying to medical attention, Paucity of

Funds, late booking and registration. Since this study hypothesizes that socio-demographic, socio-economic and socio- cultural characteristics are more likely to be associated with maternal mortality in Nigeria. I therefore accept the alternate hypothesis that socio-demographic, socioeconomic and socio-cultural characteristics were found to have association with maternal mortality in Nigeria.

KEY INFORMANT GUIDE

PERCEPTION ABOUT CONTRIBUTORY FACTORS TO MATERNAL MORTALITY IN NIGERIA

Name of Note taker .....

Date.....

Place of discussion.....

Time discussion started.....

Time ended.....

I am Miss Popoola Oladoyin Olabisi a final year student of the department of Demography and Social Statistics, Federal University, Oye-Ekiti, Ekiti State, Nigeria. With matriculation number DSS/12/0630. I am conducting a research on **FACTORS ASSOCIATED WITH MATERNAL MORTALITY IN NIGERIA.** I am interested in knowing your perception about possible factors that may contribute to maternal mortality in Nigeria. I hope that your answers to my questions reveal your perception about factors associated with maternal mortality and this will help to buttress the result of my research.

I expect our discussion to last about 30 - 60 minutes. Thank You.

KEY INFORMANT GUIDE

QUESTIONS

1. What are your background variable characteristics?

i AGE OF PARTICIPANT

ii LEVEL OF EDUCATION

iii NUMBER OF CHILDREN

iv RELIGION

v OCCUPATION

vii RESIDENCE

2. What is your opinion about level of cases of maternal mortality in your area?
3. How often do women attend for their pregnancy or delivery?
4. Do you think clinic attendance during pregnancy or delivery is effective in preventing maternal mortality?

5. Despite clinic attendance during pregnancy, can women still die from pregnancy and delivery cause? Why?
6. What are the factors responsible for maternal related mortality
7. What programmes has your clinic put in place to address the issue of maternal related mortality? Have they been effective?
8. Do you think antenatal care service is effective in reducing maternal mortality?
9. How are the women responding to the organized programme on maternal mortality?
10. What is the effort of the government in addressing maternal mortality in Nigeria? Have they being effective?

5.3 RECOMMENDATIONS

Since age is the only factor that the study revealed to have no association with maternal mortality in Nigeria, I recommend that sexual and reproductive health programs should be incorporated into the curriculum right from primary school level to tertiary institution level. Since wealth status determines maternal mortality as revealed from this study, employment should be provided for Nigerian women to achieve the fifth aim of the sustainable development goals in Nigeria. This will go a long way to reduce if not totally eradicate the problem of maternal mortality in Nigeria. I also recommend that review should be made on reports of maternal mortality in each region so as to address how each region is tackling this issue in Nigeria.

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APPENDIX