

An Assessment of the Factors Affecting Borno State Policy on Maternal Mortality Reduction

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Abstract: Nigeria has been mentioned by the United Nations as having one of the highest rates of maternal mortality in the world. Reducing high maternal mortality ratio is not just a technical and medical challenge but largely a political one which requires the attention and commitment of political leaders. This study brought together some of the determinants of maternal mortality mentioned in extant literature and used simultaneous multiple regression on fourteen variables for maternal mortality modelling in Nigeria. Stepwise regression was then applied to identify, from among the fourteen variables, the major determinant factors that appear to affect maternal mortality ratio more than the others. Narrowing down attention to a small number of the major determinants of high maternal mortality should help gain the focused attention of government since maternal mortality is just one among hundreds of issues competing for the attention of political leaders at any given time. Data on the 36 states of the federation and the FCT Abuja was obtained from the Nigeria Demographic and Health Survey 2008, the Annual Abstract of Statistics of the National Bureau of Statistics and the Society of Obstetrics and Gynaecology of Nigeria. The study found that delivery by a skilled health professional and educational attainment of women had more effect on maternal mortality ratio than the other factors. The implication of this finding is that advocates of maternal mortality reduction in Nigeria will need to focus more attention on developments in the educational sector and not just on making direct improvements to the healthcare system.

Keywords: maternal mortality, stepwise regression, maternal mortality ratio.

1. INTRODUCTION

Maternal mortality, also known as maternal death, continues to be the major cause of death among women of reproductive age in many countries and remains a serious public health issue especially in developing countries (WHO, 2007). As explained in Shah and Say (2007), 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 accidental or incidental causes. Globally, the estimated number of maternal deaths worldwide in 2005 was 536,000 up from 529,000 in 2000. According to the WHO Factsheet (2008), 1500 women die from pregnancy or pregnancy-related complications every day. Most of these deaths occur in developing countries, and most are avoidable. Of all the health statistics compiled by the World Health Organization, the largest discrepancy between developed and developing

countries occurred in maternal mortality. Ujah et al. (2005) noted that while 25 percent of females of reproductive age lived in developed countries, they contributed only 1 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-Saharan Africa and one third in South Asia.

Improvement of the maternal health becomes source of concern; this is because global community want to reduce the maternal mortality rate. The effort became fruitful as resulted to declining the ratio of maternal mortality from 385 in 1990 to 216 in 2015. Therefore maternal health advancement is central in making health policy globally (Alkema et al., 2016). The maternal mortality burden is high still in many South Asian and less develop (Kassebaum et al., 2016; Vos et al., 2016). About 250,000 women lost their lives in 2015 alone. Unfortunately all the death have been avoidable because are from preventable causes. The preventable causes are eclampsia, anaemia, bleeding and prolong labour. If there is accessibility to the maternal health services by those women the deaths have been avoidable (Christopher, Aminu, & Onwenu, 2015; Lawson & Keirse, 2013; Olusegun, Ibe, & Micheal, 2012).

Maternal health facilities and care accessibility to are among the woman right all over the world and is regardless of the financial or social status of the women (Ginsburg et al., 2017; Matsuoka, Aiga, Rasmey, Rathavy, & Okitsu, 2010). Many research findings revealed that Nigeria and many less develop countries has high maternal death burden with high regional variation in terms of utilization of the health care (Gatrell & Elliott, 2014; Organization, 2016; Singh, Rai, & Singh, 2012).

Nigeria is a country which is characterized by many problems ranging from poverty, insecurity, political instability, geographical barriers and decayed social infrastructures including health facilities. Therefore the country is fighting challenges of health socio-demographic which include life expectancy (low), high maternal and infant mortality, high fertility rate and communicable diseases (Abbass, 2010; Development & Organization, 2010). Even though the ratio of the maternal death in Nigeria decline from 1350 in 1990 to 814 in 2015, the country remain the second in terms of maternal death after sierra Lone within Sub Saharan African sub region (Organization & UNICEF, 2015b; Tabutin, Masquelier, Grieve, & Reeve, 2017). Many studies have

argued that Socio-demographic and economic factors play significant role in maternal health services in terms of availability and accessibility (Marmot, Allen, Bell, Bloomer, & Goldblatt, 2012; Moreno-Serra & Smith, 2012).

Globally, more than 200 million women get pregnant annually (Alkema et al., 2016), yet safe deliveries that are celebrated worldwide sometimes turns tragic to many women and families most of whom are poor and powerless. This is because women die because of pregnancy or childbirth from causes that are preventable. Maternal mortality involves the women death as result of pregnancy or six weeks (42 days) after the giving birth by the women, not considering of the period, from any pregnancy connected causes and accidental cause were excluded (Ebeniro, 2012; Eneh, 2017; Oppong & Ebeniro, 2016). In the 1980s some scholars argued that there are many deaths that occurred six weeks after the women had giving birth, therefore because of this, some definitions by Koonin and other scholars extended the period up to a period of good one year even after the pregnancy was terminated (Berg, Callaghan, Syverson, & Henderson, 2010; Howell & Zeitlin, 2017).

More than 350,000 pregnant women lost their lives annually as result complications from pregnancy or giving births of the child, 99 percent are found less developed nations. In developed nations of the world, a woman's maternal mortality risk is 1 in 5,600 as against less developed countries like Africa 1 in 30, (Organization, 2014; Oyerinde, 2016). Deaths of pregnant women are disappointingly unimaginable. In 2015 approximately around 303,000 pregnant women lost their lives as a result of giving birth to the child and complication from the pregnancy. Therefore every day close total of 830 mothers lost their lives as result of complication related to pregnancy. Nearly all the recorded death happened at developing nations and such deaths could have been avoidable if needed intervention is in place (Bhavin, 2018; Patel, Sharma, & Vati, 2018)

Sadly, Countries in Africa registered the highest number of a women dyeing as a result complication related to pregnancy, annually 253,000 women with the pregnancy related complication are dyeing (Yusuf Muhammad Adamu, 2014; Collymore, 2003; Supply & Programme, 2014). Many countries in Africa reduced the rate at which women dyeing as result of pregnancy. Other regions like North Africa and Asia recorded more success. The ratio of the maternal mortality of the world has reduced by 2.3% between 1990 and 2015 yearly (Bacci, 2017)

Statement of the Problem

In spite of all the policies, declarations, conferences and other efforts aimed at reducing the scourge of maternal deaths across the globe, only modest gains in maternal mortality reduction appear to have been achieved in many countries in the past 20 years (Shah and Say, 2007). Countries in Africa may have actually lost ground while many developing countries have fallen far short of the standards set by the

World Health Organisation's initiative on Safe Motherhood. In Nigeria, the Federal Ministry of Health had set Year 2006 as the target year that maternal mortality would have been reduced by 50 percent. However, not only were these targets not achieved but also the maternal health situation in Nigeria is now much worse than in previous years (Ujah et al, 2005).

Past efforts to reduce maternal mortality ratio in Nigeria were concentrated on making direct improvements to the health system. These efforts have not involved enough resources to successfully reduce maternal mortality in the country. In view of this lack of success, Shiffman and Okonofua, (2007) noted that the high maternal mortality in the country will have to be tackled by generating sufficient political priority to make governments deploy enough resources to successfully reduce maternal mortality in Nigeria. This study brings together some of the factors responsible for the high maternal mortality in the country, and uses stepwise regression to select the ones that appear to have more effect on maternal mortality ratio in Nigeria. Narrowing down the range of factors to be considered by political office holders should help bring focus to the challenge of generating political priority, since maternal mortality is just one among hundreds of issues competing for the attention of political leaders at any given point in time.

Objective of the Study

The objective of this study is to:

- i. Bring together some of the risk factors mentioned in the past as responsible for high maternal mortality in Nigeria. These include whether or not the woman received antenatal care, whether delivery was assisted by a health professional, whether delivery took place in a health facility, the educational attainment of the woman, income distribution etc.
- ii. Identify the factors that seem to have more effect than the others on maternal mortality in Nigeria.

II. LITERATURE REVIEW

Different analytical frameworks have been used in studies on maternal mortality. Mojekwu (2005) categorized the causes of maternal deaths into medical factors, health factors, reproductive factors, unwanted pregnancy and socioeconomic factors. Ibe (2008) employed a multistage sampling technique while Okaro et al. (2001) carried out retrospective comparative analysis of maternal deaths for two ten-year periods.

Okonofua, Abejide, and Makanjuola (1992) examined the background factors that predisposed women to maternal mortality at the Obafemi Awolowo University hospital in Nigeria. The study investigated their sociodemographic characteristics, their use of prenatal care, and the incidence of delay in clinical management. The results showed that the maternal deaths involved women who were younger and of poorer socioeconomic status than the women in the control group. Both groups showed an equal lack of prenatal care. However, a higher incidence of delayed treatment was found

in the management of the cases of maternal deaths. The study also found that maternal mortality in the study population can be reduced through improved transportation and institutional management, and, on a long-term basis, through the adoption of measures to improve the socioeconomic status of women.

Ni and Rossignol (1994) in a community-based maternal mortality surveillance study in Sichuan, China assessed the impact of family planning status on maternal mortality. They found that the leading causes of death for both planned and unplanned pregnancies were the same: hemorrhage, postpartum infection, pregnancy-induced hypertension, cardiac diseases, and pulmonary diseases. As among women with "planned" pregnancies, about 40% of maternal deaths among women with "unplanned" pregnancies occurred at home, and 20% occurred en route to a hospital. After controlling for the confounding effects of gravidity and education, with additional control for the effect of prenatal care visits the study indicates that women with "unplanned" pregnancies have a higher risk of maternal death, which is only partially attributed to less prenatal care.

Garenne et al. in a 1997 case control study to analyze risk factors for maternal mortality in three leading hospitals in Dakar, Senegal identified the leading causes of death as puerperal sepsis and other infections, haemorrhage, eclampsia, ruptured uterus, and anaemia. Results of the case-control study revealed the major risk factors associated with health system failure as medical equipment failure, late referral, lack of antenatal visit, and lack of available personnel at time of admission. Various indicators of maternal status at time of admission (complications, blood pressure, temperature, oedema, and haemoglobin level) and of health history prior to admission (previous complications, previous C-section, lack of treatment) were also strong predictors of survival. Lastly, socio-demographic factors also appeared as correlates of maternal mortality, in particular: first pregnancy, pregnancy of high birth order, rainy season, being unmarried and low level of education. Okaro et al. (2001) carried out retrospective comparative analysis of maternal deaths at the University of Nigeria Teaching Hospital, Enugu for two ten-year periods (1976-1985 and 1991-2000) in order to evaluate the effect of Safe Motherhood Initiative on maternal mortality in the hospital.

Mojekwu (2005) explained that due to complexity in measuring maternal mortality, even countries with complete vital registration systems find it a daunting task to measure it accurately. Assessing levels of maternal mortality is complex because it requires knowledge about deaths of women of reproductive (15-49) years, the cause of death and also whether or not the women were pregnant at the time of death or had recently been so. Yet, few countries record births and deaths, even fewer register the cause of death and fewer still systematically note pregnancy status on the death form. Misclassification of maternal deaths could arise for a variety of reasons such as underreporting, illiteracy and cultural norms. Where vital registration systems are absent or

inadequate, it is possible to estimate maternal mortality using survey techniques. Usually, high mortality countries have neither adequate systems of registration nor the resources to rely on surveys. Shah and Say (2008) recommend careful evaluation of data and periodic measurement by multiple methods in order to obtain accurate estimates. Because of huge variation across countries in sources of data, type and completeness of information available and extent of missing information, the estimates are sometimes based on reconciliation of data from different sources. Some data could be derived from vital registration-with good or poor and uncertain attribution of cause of death; some data from the direct sisterhood methods used in Demographic and Health Surveys of households; some other data could be obtained from Reproductive Age Mortality Studies (RAMOS); and some from disease surveillance, sample registration, censuses or special studies.

Lawoyin et al. (2007), carried out a cross-sectional, community-based study to assess men's perception of maternal mortality in Nigeria and found that efforts were required to improve men's attitudes and knowledge in order to make them active participants in the fight to reduce maternal mortality. Maternal deaths in this study were blamed on healthcare workers not being skilled enough, financial barriers, failure to use family planning, emergency, antenatal, and delivery care services. Factors associated with knowledge and attitude to preventing maternal mortality are discussed. Healthcare reforms must be coupled with socio-economic improvements and efforts made to improve men's attitudes and knowledge in such a way as to make them active stakeholders, more supportive of preventing maternal mortality. Curiously, this study found that several African countries where facility delivery is quite high show that maternal mortality remains high also, informing that facility delivery alone is not enough to significantly reduce maternal deaths implying that workers had to be trained in emergency care or the benefits of facility delivery will not be appreciated Alves (2007) in a study titled Maternal Mortality in Pernambuco, Brazil: What has changed in ten years? examined changes in levels and patterns of maternal mortality in Pernambuco, Brazil, in 1994 and 2003. The research was carried out in five sub-regions of Pernambuco using the Reproductive Age Mortality Survey (RAMOS) method. The study found that the illegal status of abortion in Brazil remains an important contributory factor for abortion-related deaths. Approximately 94% of the maternal deaths were judged to be avoidable with improvements in health care. Maternal mortality declined by 30% over the ten-year period.

Shah and Say (2007), reproductive health researchers with the WHO, produced a paper on Maternal Mortality and maternity care. The authors showed that gains in reducing maternal mortality between 1990 and 2005 have been modest and uneven, and that countries with high maternal mortality ratios shared problems of high fertility and unplanned pregnancies,

poor health infrastructure and low availability of health personnel.

Ibe (2008) conducted a study in Anambra state of Nigeria on care utilization and poor mortality index. A multistage sampling technique was employed in a cross sectional study to assess the use of maternal services in Anambra state and found that the problem of maternal mortality in the country may not necessarily lie with utilization but with the quality of services. This finding tends to support Taiwo et al. in the view that the problem of maternal mortality in Nigeria may not necessarily lie with failure to utilize maternal care but that the health care system probably needs to be repositioned to meet the challenges of modern obstetric care.

Mairiga et al. (2008) conducted a population-based qualitative study in two urban and two rural communities in Borno state, Nigeria to find out community's knowledge and perceived implications of maternal mortality and morbidity as well as the community members' perception on ways to prevent the scourge. Through focus group discussions the study demonstrated that maternal mortality and morbidity is common and well known in the communities studied and that the implications are well appreciated. The study found 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.

Harrison (2009), argued that attempts to reduce the high maternal mortality ratio in Nigeria have failed. Such attempts had been focussed on transforming the health system by directly applying expertise and resources on high maternal mortality and its surrounding elements. He argues that the complexities and uniqueness of Nigeria's situation call for a fundamental remedy based on stamping out the chaos in the country by the country getting its politics and governance structures right.

Causes of Maternal Mortality

The WHO Factsheet (2008) indicates that globally, about 80 percent of maternal deaths are due to four major causes- severe bleeding, infections, hypertensive disorders in pregnancy (eclampsia) and obstructed labour. Complications after unsafe abortion cause 13% of maternal deaths. Among the indirect causes of maternal death are diseases that complicate pregnancy or are aggravated by pregnancy, such as malaria, anaemia, hepatitis, anaesthetic death, meningitis, HIV/AIDS, sickle cell anaemia, anaemia and acute renal failure, which could be a complication of eclampsia. Women also die because of poor health at conception and a lack of adequate care needed for the healthy outcome of the pregnancy for themselves and their babies.

Omoruyi (2008) estimated that in Nigeria, more than 70 percent of maternal deaths could be attributed to five major complications: haemorrhage, infection, unsafe abortion, hypertensive disease of pregnancy and obstructed labour.

Also, poor access to and utilization of quality reproductive health services contribute significantly to the high maternal mortality level in the country.

As explained in Mojekwu (2005) the causes of maternal deaths can be classified into medical factors, health factors, reproductive factors, unwanted pregnancy and socioeconomic factors. According to the author, medical factors include direct obstetric deaths, indirect obstetric deaths and unrelated deaths. Direct obstetric deaths result from complications of pregnancy, delivery or their management. Indirect obstetric deaths result from worsening of some existing conditions (such as hepatitis) by pregnancy. Health service factors include deficient medical treatment, mistaken or inadequate action by medical personnel, lack of essential supplies and trained personnel in medical facilities, lack of access to maternity services and lack of prenatal care. Other risk factors for maternal mortality in Nigeria include maternal age, illiteracy, non-utilisation of antenatal services and grand multiparity (Ujah et al. 2005)

As explained in the WHO Factsheet (2008), drugs already exist (oxytocin) which, if administered immediately after childbirth, can reduce the risk of bleeding very effectively. Sepsis – a very severe infection – is the second most frequent cause of maternal death. It can be eliminated if aseptic techniques are respected and if early signs of infection are recognized and treated in a timely manner. The third cause, eclampsia, emerges as pre-eclampsia, a common hypertensive disorder, which can be detected during pregnancy. Although pre-eclampsia cannot be completely cured before the delivery, administering drugs such as magnesium sulfate can lower a woman's risk of developing convulsions (eclampsia), which can be fatal. Another frequent cause of maternal death is obstructed labour, which occurs when the fetus' head is too big compared with the mother's pelvis or if the baby is abnormally positioned. Skilled practitioners can now use the partograph (a simple tool for identifying problems early in labour) to recognize and deal with slow progress before labour becomes obstructed, and, if necessary, ensure that Caesarean section is performed on time to save the mother and the baby.

For women to benefit from these cost-effective interventions they must have antenatal care in pregnancy, in childbirth they must be attended by skilled health providers and they need support in the weeks after the delivery (WHO, 2008). Whereas in many developed countries almost all pregnant women receive antenatal and postnatal care and are attended by a midwife and/doctor at childbirth, available data show that less than two thirds receive similar services in developing countries. Many pregnant women in Nigeria do not receive the care they need either because there are no services where they live, or they cannot afford the services because they are too expensive or reaching them is too costly. Some women do not use services because they do not like how care is provided or because the health services are not delivering high-quality care. Further, cultural beliefs or a woman's low status in society can prevent a pregnant woman from getting the care

she needs. To improve maternal health, gaps in the capacity and quality of health systems and barriers to accessing health services must be identified and tackled at all levels, down to the community.

Current Efforts to Reduce Maternal Mortality in Nigeria

Although attempts have been made in the past aimed at reducing maternal mortality in Nigeria, such attempts, especially by the Federal and state governments, have generally not proved very successful in achieving the desired results. Some promising results however have recently begun to be recorded through some policy initiatives by a few state governments. In Anambra state, the state house of assembly approved a bill in 2005, guaranteeing free maternal health services to pregnant women (Shiffman and Okonofua, 2007). The state commissioner of health, who is an obstetrician and gynaecologist, played a central role in its development and adoption. In Kano state, the state government included in its budget a line item for free maternal health services.

The former state commissioner of health together with a senior obstetrician and gynaecologist, played central roles in creating this positive environment for maternal health. In Jigawa state, state and local budgets have provided funds for the upgrading of obstetric care facilities in hospitals, the recruitment of obstetricians and gynaecologists and the provision of ambulances at the local level to transport pregnant women experiencing delivery complications to health facilities. The former executive secretary for primary health care, who subsequently became state commissioner for health, stood behind these initiatives.

A common trend to these initiatives is that they were championed in each case by a state commissioner of health who obtained political commitment from the governor, state assembly and other relevant government officials, thus lending credence to the view that the battle to combat high maternal mortality is not just a medical or technical matter but rather requires high level political commitment.

Another thing common to these initiatives is the attempt to introduce free maternal care, usually through user-fee waivers. However, these policies mostly do not seem to be adequately planned for and are consequently unsustainable. The main challenge to the introduction and implementation of user-fee waivers is the provision of adequate number of skilled health care personnel to handle the huge influx of pregnant women who come to avail themselves of the free maternal care services. A second challenge is that large amounts of drugs are used up in very short periods of time. Also, an overwhelming amount of clerical work is required to account for the distribution and use of medicines. Hence there is need for adequate planning before the introduction of user-fee waivers.

The Lagos State Government, in an effort stem the tide of maternal and child deaths recently set up five Maternal and Child Care centres (MCCs) fully equipped and well-staffed to

provide a wide spectrum of care including family planning, ante- and post- natal care to facilitate safety of women during child delivery. The MCCs are located in surulere, Ikorodu, Isolo, Ifako-Ijaiye, and Ajeromi. Other locations include Alimosho, Ibeju-Lekki, Epe and Badagry among others (Sunday Punch, 2012). One recent initiative that seems to be successful is the Ondo State Government initiative known as Abiye. This initiative in the rural communities in Ondo State, uses mobile phones to save lives of indigent pregnant women.

According to the World Bank (2008) 51.6 Percent of Nigerians live in rural areas, most of whom are cut off from modern medical facilities, making pregnant women vulnerable to readily preventable adverse outcomes. Most of

these adverse outcomes result from delay in seeking care, getting to health centres when care is sought, receiving care on getting to the health centre, and referring patients to more advanced centres when necessary.

In the Ondo State initiative, pregnant women go for antenatal care at primary health care centres where each one is given a mobile phone. The pregnant women are put in government prepaid, caller-user groups and tracked by trained personnel so the pregnancy is monitored. Calls to the healthcare personnel are toll free. The Pilot scheme is in Ifedore Local Government Area of Ondo state (Sunday Punch, 2011). Primarily because the lines are tollfree the delay in seeking care is minimised to almost zero. The programme also takes care of the delay in reaching health centres since ambulances are stationed to bring in the pregnant women when they call. In emergencies, the health personnel go on motorcycle with a First Aid box. If it is something they can't handle, the women are taken to the general hospital.

A major shortcoming of all these efforts is that they are disjointed and uncoordinated, with each state working according to its own dictate and vision. What is required is an integrated approach to replicate successful programmes in other states of the country. The disjointed nature of these efforts is indicative of overall failure in leadership and governance in the healthcare sector and, indeed in other spheres of Nigerian life.

The resulting chaos manifests in inconsistent, contradictory, ill-thought-out, and ever changing policies. For instance, one stop-gap initiative introduced to address the issue of low proportion of births attended by skilled health personnel is the Midwives Service Scheme. Under this scheme the three tiers of govt are to share the costs of engaging midwives on a massive scale. It is not clear, however, where the midwives are to come from since the relevant regulatory bodies, the Nursing and Midwifery Council of Nigeria and the Federal Ministry of Health appear determined to drastically restrict the number of midwives and nurses that may graduate each year. As a result of regulations aimed at achieving such ends, many states do not have enough nurses and midwives to effectively meet the basic demand for maternal care, let alone handling things on a massive scale. Not helping matters also is the

unwillingness of governments in Nigeria to reveal how they spend money. It is difficult to comprehend the rationale behind the phenomenon of unspent funds whereby funds are usually returned as unspent at the end of each budget period even as 52,000 Nigerian women are consigned to early graves owing to failure of the government to provide facilities to assist in pregnancy and childbirth. A recent report by the Centre for Reproductive Rights (CRR), notes that in 2008 Nigeria gave about 5% of its annual budget to the health sector. This amounts to just one third of what it promised in a regional treaty. And without public access to fiscal information, it is difficult to find out who received the money and how it was spent.

Policies and Declarations on Maternal Mortality Reduction in the Past

The issue of maternal deaths emerged as a world health concern through the United Nation's launching of the Safe Motherhood Initiative (SMI) in Kenya in 1987. The Safe Motherhood Initiative, whose target was the reduction of the estimated yearly world maternal mortality figure of 500,000 by 50 percent by the year 2000 was formally launched in Nigeria in 1990. Other international conferences that established similar targets of reducing the 1990 levels of maternal mortality by fifty percent include the Beijing Conference held at the instance of women activists from across the globe back in 1995 (Daily Independent, 2010), the World Summit for Children (WSC) in 1990, the International Conference on Women in 1994, the Fourth Conference on Women in 1995 (Mojekwu, 2005), and the United Nations Millennium Summit in 2000, which developed the Millennium Development Goals (MDGs) to enable the poorest countries improve the quality of life of their citizens, and resolved to achieve these goals by 2015. The fifth MDG requires all member states to improve maternal health and, in order to achieve this goal, a number of targets were set, including reducing maternal mortality by three quarters (75%) between 1990 and 2015 (U.N. 2008).

Regional Treaties, Policies and Declarations include the African Charter (O.A.U, 1982), the Maputo Protocol (CRR and WARDC, 2008), and the 2001 Abuja Declaration in which African Union governments pledged to allocate at least 15% of their annual budgets towards improving the health sector (O.A.U, 2001).

National Policies and Strategies include the 1988 National Health Policy and Strategy to Achieve Health for all Nigerians, which was Nigeria's first comprehensive health policy (Federal Ministry of Health, Nigeria 1988). The

2004 Revised National Health Policy replaced the 1988 National Health Policy. Reproductive Health Policies include Nigeria's National Reproductive Health Policy and Strategy of 2001 (Federal Ministry of Health Abuja, 2008), the Integrated Maternal, Newborn and Child Health Strategy in 2007 (2007 IMNCH Strategy) and the National Millennium Development Goals Report (2004).

III. MATERIAL AND METHODOLOGY

Study Area

Maiduguri also called Yerwa by locals is the capital and the largest city of Borno State in north-eastern Nigeria. The city sits along the seasonal Ngadda River which disappears into the Firki swamps in the areas around Lake Chad (Encyclopædia Britannica, 2007). Maiduguri was founded in 1907 as a military outpost by the British and has since grown rapidly with a population exceeding a million by 2007. As of 2006 census it has a population of about 543,016 (NPC 2006).

Study Design and Data Collection

The study used and adopted a retrospective record of 1,006 maternal deaths at the four available General hospitals in the study area from 2010 to 2015; it included all pregnancy related deaths that occurred within the period of study. It was an assessment of all deaths related to pregnancy record in the reports at the General hospitals within the six year time-period. Furthermore, midwives working in the Maternity units of the hospitals were asked to assist in shading more light in some cases and other related issues from folders of the patient and other records regarding the obstetric complications. They also shared their experiences on issues relating to pregnancy and maternal mortality at the hospitals. The data collection instruments were used to elicit information from the patients' admission registers at the maternity units, patients' folders, and Health Information Management System (HIMS) unit. The data collection instrument used to record the number of maternal deaths, causes of the deaths, age of the dead women, women's parity, and place of residence among others.

Statistical Analysis

Because of the descriptive nature of the data the analysis was done using tables, frequencies and percentages. MMR was compute by dividing number of deaths counts by total number of deliveries and multiplying by 100,000 live-births. The study also, calculate case-fatality rate (CFR) as the number of deaths divided by the total number of obstetric complications multiplied by 100. The trends of maternal deaths and MMR over the six years studied, a line graph of maternal death against year was formed at first to have an idea about the pattern of temporal distribution of the deaths.

IV. DISCUSSION

From our findings, two crucial issues require priority attention in the fight to reduce maternal mortality in Nigeria: how to dramatically improve education, especially of women, and how to provide affordable skilled professional attendants for an increasing number of births with back-up for complications and emergencies. These findings are in line with previous literature which indicates that literacy level correlates closely with maternal mortality reduction (Harrison, 1985; Onwuhafua et al., 2000; Okaro et al., 2001; Adamu et al., 2003; Liljestrand, 2004; Ujah et al., 2005). The proportion of births attended by trained personnel has also been indicated in

previous studies as significantly affecting maternal mortality (Robinson and Wharrah, 2001; Kurjak and Bekarac, 2001; Ghosh, 2001; and Ibeh, 2008).

Because education of women does not come under the ambit of the Ministry of Health, any effective advocacy for the reduction of maternal mortality in Nigeria will have to collaborate to an appreciable extent with interests outside the health ministry in order to achieve success. This is a very important consideration as past efforts to reduce maternal mortality have tended to focus primarily on medical interventions. Delivery assisted by health professionals was identified in this study as one of the main factors for the reduction of maternal mortality. Over the years the proportion of births attended by skilled health personnel has not changed much.

Against the backdrop of government's not-too-encouraging disposition towards funding higher education and recent moves by the Nigeria Medical Association (NMA) to further restrict student intake into medical schools in the country, the statistics on proportion of births attended by skilled professionals can only get worse. Citing what it referred to as over-admission, the NMA claims that facilities in medical schools are overwhelmed and therefore restricts student intake into colleges of medicine. But this is tantamount to putting the cart before the horse.

Nigeria's record of one medical doctor to 6,000 persons is scandalous, to say the least, when juxtaposed with the World Health Organisation's prescribed ratio of one medical doctor to 1,000 persons. Cuba has a doctor population of one to 165, while South Korea has one to 337 (The Punch Newspaper, 2011). The correct approach to address this deficiency would be to adequately fund and equip medical schools to train enough doctors (in relation to the prescribed ratio) while at the same time enhancing efficiency in medical training by providing standard education in medicine. The problem has its roots in the general underfunding of education in the country predicated on lack of vision and inadequate planning to meet the future manpower needs of the country. The current practice of limiting admissions by prescribing fixed number of medical students to each college of medicine without taking into consideration the exploding population of the country, and failing to link admissions into medical schools with the future needs of an increasing population can only widen the identified gap and worsen the doctor/population ratio.

One surprising result was that the use of prenatal care was not statistically significant in reducing maternal mortality. This runs contrary to results of some previous studies (Ogunniyi and Faleyimu, 1985; Harrison, 1985; Walker, 1986) which suggest that non-use of prenatal care is a strong high-risk factor in maternal mortality. However, our result is in line with Okonofua et al. (1992) which saw no significant difference between use and non-use of prenatal care. Okonofua inferred that while the use of prenatal care may reduce the rates of pregnancy related complications, the prior

use of prenatal care is unlikely to affect the outcome once complications have actually set in at home. What becomes important, at this point, is how quickly the patient gets to an appropriate health care facility as well as the quality of care she receives on arrival at the centre.

V. CONCLUSION AND RECOMMENDATIONS

Based on the temporal trends of hospital deliveries, maternal deaths, MMR observed, the trends were not encouraging. The observed trend shows annual fluctuations which indicated something wrong with the health system in the study area. Despite the fact that the patterns of maternal mortality and MMR in the General medical clinics over the time of study have seen a decrease, the decay isn't quick or soak enough to have the option to meet the targets of the MDG 5. Notwithstanding a few endeavours to check these patterns the quantity of ladies who pass on from labour is still high.

There are various medicinal and non-therapeutic, immediate and circuitous causes that record for the maternal passing in the examination zone and the issue must be given huge consideration so as to control the circumstance. Further examinations ought to be completed to decide the careful connection between the two (restorative and non-therapeutic elements) and how they happen in the maternal mortality circumstance. Based on the above finding the study recommends the following:

- i. There is the need for the health stake-holders to advice the government to intensify its efforts of "HaihuwaLafiya" programme, through providing additional vehicles (Ambulances) in order to encourage women especially those who are living far away from the health facilities for attending the hospitals for deliveries.
- ii. Health policy makers should give more consideration the major obstetric complications that causes maternal deaths in terms of their prevention and cures to lower their contributions towards maternal deaths. This would help in keeping the level of maternal mortality low.
- iii. Looking at the age distributions of women who dead in pregnancy related complications, policies or a low should be made in order to discourage early age pregnancy in order to improve maternal health outcomes

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