

# Assessment of Prevalence Rate of Maternal Mortality in Adamawa State, Nigeria

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**Abstract** - Maternal Mortality refers to any death of a woman due to complications from pregnancy or deaths within 42 days after childbirth, while Maternal Mortality Rate is the ratio of Maternal Mortality per 100,000 childbirths. Hence, this study investigated the Prevalence Rate of Maternal Mortality in Adamawa State, Nigeria. The study used Ex post facto design with quantitative approach. A Secondary data between the year 2011 and 2022 was obtained using a purposive sampling technique from some Health Services Providing Centres across Adamawa State. A Statistical Package for Social Science (SPSS) Version 25 software was used for data diagnostic tests and analysis. Based on the findings, the prevalence rate of the maternal mortality fluctuated within the study period recording the lowest and highest in 2017 and 2021 with 284 and 605 mortalities per 100,000 childbirths respectively. The study concluded that the average Maternal Mortality rate in Adamawa state, Nigeria for the period under review is 439 per 100,000 childbirths.

**Keywords:** Prevalence Rate, Maternal Mortality, childbirth, Antenatal, Postnatal and Pregnant Woman.

## I. Introduction

Maternal Mortality refers to any death of a woman due to complications from pregnancy or deaths within 42 days after childbirth, while Maternal Mortality Rate is the ratio of Maternal Mortality per 100,000 childbirths. Maternal Mortality has been on the increase in recent time with detrimental effects on population growth, women productivity and socio-economic development of every nation. Approximately, 830 women die every day from preventable causes related to pregnancy and childbirth. More worrisome 99% of all the Maternal Mortality occurs in developing countries (WHO, 2018).

The high indices of Maternal Mortality in sub-Saharan Africa are well known. Fortunate not enough, the effort of the global community to address the challenges of Maternal Mortality through the Millennium Development Goals (MDGs) seems unattainable in sub-Saharan Africa (Liang, Dai, & Zhu, 2011). In 1986, the World Health Organization (WHO) estimated that there were over 500,000 Maternal Mortality annually, with about 99% occurring in developing

countries. However, in 2008, the number dropped to 358,000, regrettably, developing countries still significantly contributed 99% of these deaths of which mostly are preventable (Kilpatrick et.al, 2002).

Globally, Maternal Mortalities are not only caused by medical attributes but also by other precipitating factors that ranges from poverty, low level of education, prohibited food, and some harmful cultural beliefs and practices. And more so with the global economic crises and high medical bills in both local, state and federal hospitals, a very high percentages of pregnant women especially in rural areas now patronise faith clinics and traditional practitioners as alternative health cares (Ibrahim, 2016).

Interestingly, Maternal Mortality is one of the most frequently used social indicators to measure the strength of the development of any country, but very unfortunately the situation in Nigeria is of great concern (Okeke et.al, 2016). In spite of the resolution and adoption of Sustainable Development Goals (SDGs), an effort was made by the United Nations at the end of the Millennium Development Goals in 2015, that the health of pregnant and nursing women must be improved by 2030 (Elem et.al, 2016). Despite this global odds/commitment, the risk of women dying from complications during and after pregnancy has being on the increase in most sub-Sahara African countries (Nwokocha, 2018). For instance, in Nigeria, Maternal Mortality accounts for 59,000 deaths of women annually (WHO, 2018).

Maternal Mortality rate in Nigeria is among the worst in the world. Regrettably, Nigeria's Maternal Mortality rate is comparable to countries like Liberia, Somalia and Rwanda, but lags far behind its contemporaries in the 60s like other oil-producing countries (Kuwait, Qatar, Saudi Arabia, Iran, etc.), Malaysia and Singapore (WHO, UNICEF & UNFPA, 2004). Globally, the high level of Maternal Mortality rate is not restricted to geographical location as African-American women have a higher Maternal Mortality rate than white Americans (Lang & King, 2008). Similarly, immigrants in Germany and Netherlands have higher level of Maternal Mortality rates than the natives (Razum et.al, 1999).

In Nigeria, there is regional variation in Maternal Mortality rate where the North East has one of the worst indices in Nigeria. The average Maternal Mortality rate for Nigeria as a nation is 545 deaths per 100,000 childbirths (NPC, 2009), while the Maternal Mortality rate of Borno State in North Eastern Nigeria was 1,549 per 100,000 child births (Bukar et.al, 2013).

A study carried by Bukar et.al, 2013, revealed that; the Maternal Mortality in Yola-South Local Government Area of Adamawa State was 636 per 100, 000 child birth. This implies that Bukar et.al, 2013 was limited to only Yola-South LGA. Hence this study aimed at assessing the prevalence rate of Maternal Mortality in all the Local Government Areas of the state as a large.

### **Objectives of the Study**

The objective of the study is to determine the Prevalence rate of the Maternal Mortality in Adamawa State, Nigeria.

## **II. Literature Review**

Ronsmans & Graham (2018) explain that Maternal Mortality continues to claim the lives of women of childbearing age worldwide. This problem remains a challenge for many countries that still struggle to prevent it. Over half a million annual maternal deaths propelled maternal mortality onto the international stage, where it became a global priority and the chosen outcome to assess progress on maternal health. Still, an estimated 810 maternal deaths occur each day in the world. Maternal mortality adversely affects women, their families and communities. The Millennium Development Goal (MDG) 5 to reduce the global burden of maternal death by 75% by 2015, and the recent Sustainable Development Goal (SDG) 3, which seeks to significantly cut the number of deaths to 70 per 100,000 Child births by 2030, led to the implementation of interventions to reduce the global burden of maternal mortality (WHO, 2019).

Alkema et.al (2016) revealed that Nigeria is one of the countries in Sub-Saharan Africa where Maternal Mortality has remained a problem. The country's progress towards cutting the number of maternal deaths has been largely insufficient. Maternal Mortality persists in Nigeria despite strategies like the promotion of institutional deliveries, training and deploying new skilled health workers. It is also among the top six countries in the world that contribute to more than 50% of all global maternal deaths (Hogan et.al, 2010). In 2008, Nigeria had the second largest recorded number (50,000) of maternal deaths with an estimated Maternal Mortality rate of 840 per 100,000 Child births (WHO, 2010). The Nigeria Demographic and Health Surveys (NDHS, 2013) revealed a national Maternal Mortality rate of 576 deaths per 100,000

Child births and 545 deaths per 100,000 in 2013 and 2008 respectively. However, studies have shown that the levels of Maternal Mortality vary within the country. There are states and health facilities that have higher levels of Maternal Mortality compared to the national average. For instance, some northern states like Kano in 2008 had Maternal Mortality of 1600 deaths per 100,000 livebirths (Galadanci, Idris, Sadauki & Yakasai, 2010). While Doctor et.al (2012) revealed that 1049 deaths per 100,000 Child births were reported in Zamfara state. Also, health facilities show similarly high levels of Maternal Mortality with 927 deaths per 100,000 Child births reported for 21 health facilities in three states - Katsina North, Lagos South and the Federal Capital territory North (Fawole, et.al, 2012). Like many countries in Sub-Saharan Africa, the leading causes of Maternal Mortality in Nigeria are obstetric hemorrhage, eclampsia, sepsis (Septicaemia) and complications from unsafe abortions (Ujah et.al, 2005). Similarly, studies show that factors such as age, education, antenatal care, parity, domestic violence and social autonomy which have been established as determinants of Maternal Mortality are associated with this outcome in Nigeria (Akinlo et.al, 2016).

The National Population commission of Nigeria shows the North and South as two distinct regions and are different in terms of educational levels attained, utilization of health facilities and other cultural influences like the prevalence of polygamy. These factors are linked with health outcomes such as maternal mortality. The Multiple Cluster Indicator Survey of 1999 revealed some variation in the levels of Maternal Mortality between zones in the North and South. In the South-West, Maternal Mortality rate was 166 per 100,000 Child births compared to 1549 per 100,000 Child births in the North-East (Catherine et.al, 2019).

Nigerian women are 500 times more probable to lose their lives in childbirth when compared to most advanced nations of the world (Owumi, 2002). It was also noted that Nigeria is ranked second after India in global Maternal Incident rate and the worst in Africa. Furthermore, Nigeria's Maternal Mortality is reported to be 545 per 100,000 births. The prevalence of maternal mortality in Nigeria has become very disturbing as every birth procedure becomes a potential incidence, from the report above, there is at least one case of maternal mortality in every 20 live births. This challenge may not be unconnected to the nation's poor maternal health care system (NDHS, 2013 & Elem, 2016).

It was estimated that every two minutes a female die due to pregnancy-related causes. Almost half of these Mortalities were reported in Sub Saharan Africa, thus exposing women in this region to a higher risk of losing their lives during the process of giving birth as compared to women inhabiting other

parts of the world. Females in the age group of 15-19 years are the ones at risk, thus reinforcing the fact that most of the young females are at increased risk of death due to pregnancy and its related causes and complications. Each year approximately twenty million females who survive childbirth, suffer from multiple chronic ailments resulting in maternal morbidities. (Panel & Brief, 2010). According to the WHO fact sheet, in the year 2010, about 287, 000 women died while they were pregnant or during the process of childbirth. Most of these deaths were reported in low resource settings and they could have been prevented if had a chance to be supported by good infrastructure and health services (WHO, 2018).

Being a signatory of Millennium Development goals, Nigeria has been putting in efforts to reduce maternal mortality by 75%, between the periods of 1990 to 2015, although this progress has been quite unsteady and variable as reflected in the statistical figures published in the literature. In the year 1990, an average of 473 deaths per 100,000 were reported (Sharma, et., al, 2017), in contrast to 2008 and 2013, when the Maternal Mortality toll increased to 545 deaths per 100,000 live births and 576 per 100,000 live births respectively (Hussein, et. al, 2016).

However, various predisposing factors have been identified that contribute to high Maternal Mortality, one of them being early marriages. Although the legal age for marriage in Nigeria is 18 years, yet in North-Western parts of the country with the Muslim majority, girls are married at an early age, soon after they reach puberty due to economic, social or religious constraints. Another factor attributing to high Maternal Mortality in the region is the underutilization of health care services provided at centres set up for antenatal and postnatal care by Nigerian women (60.3%), as compared

to other countries (83.4% for Cameron and 91.9% for Ghana) (Adedokun, et., al, 2009).

### III. Methods and Materials

The study used Ex post facto design with quantitative approach. Purposive sampling technique was used to sampled secondary data between 2011 and 2022 from some selected Health Services Providing Centres across Adamawa State. The data include the number of Pregnant Women Attending Clinical Services (PWACS), with both antenatal and postnatal cases (morbidity) and the number of Mortality of the Pregnant Women that undergone antenatal and postnatal and were discharged either death or alive for the period under review. However, after successful collection of the data, diagnostic tests were done before the analysis. Statistical Package for Social Science (SPSS) Version 25 software was used for the data diagnostic tests.

#### Data Diagnostic

According to DBI & NCC (2022), diagnostic test of normality must be done on the variable of interest before analysis. However, the number of Pregnant Women Attending Clinical Services (PWACS), both antenatal and postnatal cases, the number of Mortality of Pregnant Women that undergone antenatal and postnatal and were discharged either death or alive and the number of Overall Women Mortalities Irrespective of Causes of Deaths (OWMID) for the period under review are well-known as data that are scaled continuous variables. Using SPSS Version 25 software, a normality test was done to test how fit are the collected data for analysis. Kolmogorov-Smirnov and Shapiro-Wilk test were applied to confirm the normality of the data as shown in Table 1.

Table 1: Normality Test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
PWACS	.178	12	.200*	.923	12	.312
Antenatal	.175	12	.200*	.947	12	.592
Postnatal	.199	12	.200*	.919	12	.279
Mortality	.171	12	.200*	.927	12	.345
OWMID	.176	12	.200*	.952	12	.670

Source: Researcher's Results, 2024

From SPSS Version 25 output above, Kolmogorov-Smirnov and Shapiro-Wilk p-values for Pregnant Women Attending Clinical Services (PWACS), Antenatal, Postnatal, Mortality of Pregnant Women and Overall Women Mortalities Irrespective of Causes of Deaths (OWMID) are all greater than 0.05 significant level. Hence both Kolmogorov-Smirnov and Shapiro-Wilk p-values are not significant, it can be

therefore concluded that the data are all normally distributed and are fit for analysis.

#### Data Analysis

The method used to determine the Prevalence rate of the Maternal Mortality in the study area is given by the expression:

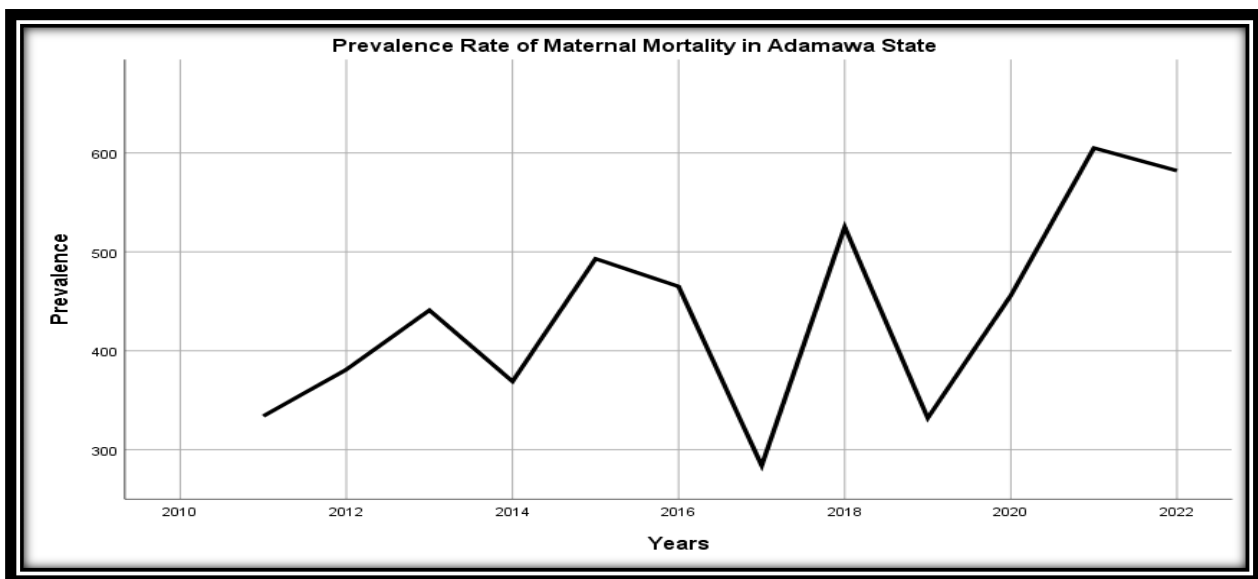
$$\text{Prevalence Rate} = \frac{\text{Number of deaths among pregnant women at time } t}{\text{Number of Pregnant Women Attending Clinical Services at time } t} \times 100,000 \text{ ----(1)}$$

**Table 2: Prevalence Rate of the Maternal Mortality in Adamawa State**

Years	PWACS	Mortality	Prevalence Rate
2011	37,779	126	334
2012	37,002	141	381
2013	34,672	152	441
2014	35,805	132	369
2015	36,138	178	493
2016	38,934	181	465
2017	40,434	115	284
2018	40,165	211	525
2019	36,480	121	332
2020	31,152	142	456
2021	28,605	173	605
2022	35,420	206	582

Source: Researcher’s Result, 2024

From the above table, the year 2021 and 2017 recorded the lowest and highest number of Pregnant Women Attending Clinical Services, while the year 2017 and 2018 recorded the lowest and highest mortality with 115 and 211 respectively in the study area. In terms of the Prevalence rate, the year 2017 recorded the lowest with 284, while the year 2021 recorded the highest with 605 prevalence rate. However, based on the above table, the average prevalence rate of Maternal Mortality in the study area for the period under review is 439 per 100,000 childbirths.



**Figure 1: Prevalence Rate of Maternal Mortality in Adamawa State**

From the above Figure, the prevalence rate of the maternal mortality fluctuated within the study period recording the lowest and highest in 2017 and 2021 with 284 and 605 mortalities per 100,000 childbirths respectively.

#### IV. Discussion of findings

In a related study by Bukar et al, 2013, the Maternal Mortality rate in Yola-South Local Government Area of Adamawa State was 636 per 100,000 childbirths, while this study revealed that the Maternal Mortality rate in Adamawa

State as a whole is 439 per 100,000 childbirths. The variation in the two studies might be due to the fact that Bukar et al, 2013 investigated only a single Local Government Area out of the twenty-one (21) Local Government Areas of the State.

Similarly, the average Maternal Mortality rate for Nigeria as a nation is 545 deaths per 100,000 childbirths (NPC, 2009), while this study investigated that the average Maternal Mortality rate in Adamawa State for the period under review is 439 per 100,000 childbirths.

Sharma et. al, 2017, in a related study reported that the Maternal Mortality in Nigeria was 473 deaths per 100,000 childbirths which is at a closed range with this investigation with 439 deaths per 100,000 childbirths in Adamawa State.

In 2008 and 2013, Hussein, et. al, 2016 also revealed that the Maternal Mortality in Nigeria tolled to 545 and 576 deaths per 100,000 childbirths respectively which is in contrast to this study with 439 deaths per 100,000 childbirths in Adamawa State.

## V. Conclusion

The study concluded that the average prevalence rate of Maternal Mortality in Adamawa state, Nigeria for the period under review is 439 per 100,000 childbirths. The investigation also revealed that the year 2017 recorded the lowest with 284 per 100,000 childbirths, while the year 2021 recorded the highest with 605 per 100,000 childbirths.

## VI. Recommendations

The study recommends that pregnant women should be encourage to visit Health Services Providing Centres regularly. Skilled health personnel such gynaecologist, midwives, nurses and medical officer should be available in various Health Services Providing Centres across the state. Quality health centres should be available, accessible, and affordable to pregnant women for effective service delivery. Also the service delivery must be acceptable to women by being responsive to local cultural and social norms.

The government, NGOs and other stakeholders should increase their effort in enhancing female education at all level. Scholarship programmes can be used to target female from poor family background and government legislation against early marriage should be introduced.

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APPENDIX

Table 3: Cases & Maternal Mortality in Adamawa State

Years	Cases (Morbidity)			Mortality	
	PWACS	Antenatal	Postnatal	Antenatal & Postnatal	OWMID
2011	37,779	11,983	4,827	126	418
2012	37,002	12,052	2,090	141	601
2013	34,672	10,920	3,890	152	437
2014	35,805	9,975	3,914	132	521
2015	36,138	13,150	2,175	178	435
2016	38,934	10,815	4,262	181	517
2017	40,434	10,941	4,785	115	374
2018	40,165	12,558	2,721	211	409
2019	36,480	11,089	3,886	121	523
2020	31,152	10,184	2,574	142	621
2021	28,605	13,392	4,885	173	497
2022	35,420	12,029	5,492	206	552

Source: Survey, 2024

PWACS: Pregnant Women Attending Clinical Services

OWMID: Overall Women Mortality Irrespective of Causes of Death

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