Preventive Medicine and Community Health

Review Article

ISSN: 2516-7073

Maternal mortality in Nigeria: A consideration of infection control factor

Osunu PT[1], Ofili CC[1] and Nwose EU[1,2]*

[1]Department of Public & Community Health, Novena University, Ogume Nigeria

[2]School of Community Health, Charles Sturt University, Orange, Australia

Abstract

The objective of this '1 of 3' mini-series is to highlight the place of infection in maternal mortality and with a view to draw attention on possibility of infectious control perspective. This seminar paper presents an overview of maternal mortality in Nigeria, followed by trends, causes and effects. Of interest, the causes highlight the contribution of infection while discussion of the effects touches on child death. Finally, the brief discussion focuses on maternal and child health.

Introduction

Maternal mortality rate is one of the indicators of health discrepancies between developed, underdeveloped and developing countries. Nigeria is one of the countries in Sub-Saharan Africa where maternal mortality has remained a problem. The country's progress towards reducing 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 [1].

In 2008, Nigeria had the second largest recorded number (50,000) of maternal deaths with an estimated maternal mortality rate of 840/100,000 live births. The Nigeria Demographic and Health Surveys (NDHS) revealed a gradual decline in national maternal mortality rate in 2013 and 2008 (Figure 1). 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 [2]. For instance, some northern states like Kano in 2008 had a maternal mortality rate of 1600 deaths per 100,000 live births while 1049 deaths per 100,000 live births were reported in Zamfara state. Also, health facilities show similarly high levels of maternal mortality with 927 deaths per 100,000 live births reported for 21 health facilities in three states - Katsina (North), Lagos (South) and the Federal Capital territory (North).

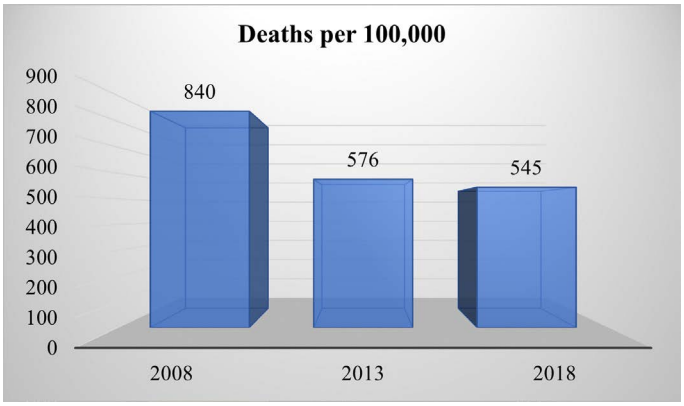

Figure 1: Mortality rates reported in between 2008 and 2018.

Trends of maternal mortality in Nigeria

Nigeria consists of six geo-political zones: the North, North West, North Central, North East; and in the South, South East, South-South and South West. The National Population commission of Nigeria shows the North and South as two distinct regions. They 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. Women in the North are less likely to give birth at health faciliities and many in some northern states, live far from health centres which are plagued by severe shortages of health workers compared to the South of Nigeria [2]. However, data from the WHO show gradual decline nationally (Table 1).

This gradual decline may also be related to the introduction of free maternal health care including antenatal services by some State governments. For instance, a report from the Southern Niger-Delta region highlighted three factors (antenatal registrations, births at hospitals and qualified healthcare professional on service) as key improvements that are attributable to the observed decline in maternal mortality rate [3].

Causes of maternal mortality

The aetiology of maternal mortality can be categorized as medical, socio-economic, cultural, behavioural, and political causes. The medical causes are the simplest to determine and describe. Several articles identified major causes of maternal mortality that are consistent with worldwide data; 70 percent of maternal deaths in Nigeria are due

***Correspondence to:** Prof. Uba Nwose, School of Community Health, Charles Sturt University, Orange, Australia; E-mail: enwose@csu.edu.au

Keywords: *Type 2 diabetes, self-monitoring, blood glucose*

Received: July 07, 2021; **Accepted:** August 01, 2021; **Published:** August 05, 2021

Table 1: 18 years' historical data of Nigeria's maternal mortality rate [1].

Year	Per 100K Live Births	Annual % Change
2000	1,200.00	0.00%
2001	1,200.00	0.00%
2002	1,180.00	-1.67%
2003	1,170.00	-0.85%
2004	1,130.00	-3.42%
2005	1,080.00	-4.42%
2006	1,040.00	-3.70%
2007	1,010.00	-2.88%
2008	996.00	-1.39%
2009	987.00	-0.90%
2010	978.00	-0.91%
2011	972.00	-0.61%
2012	963.00	-0.93%
2013	951.00	-1.25%
2014	943.00	-0.84%
2015	931.00	-1.27%
2016	925.00	-0.64%
2017	917.00	-0.86%

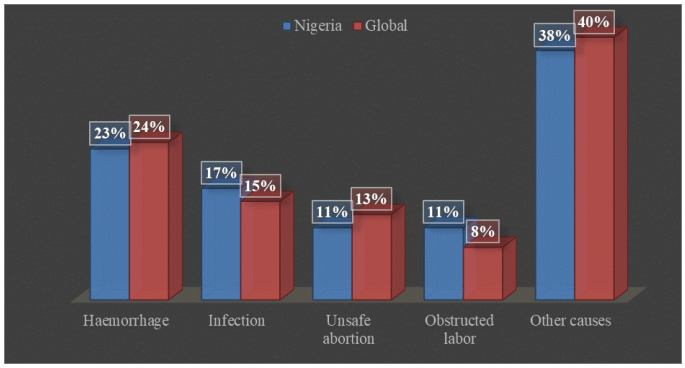

Figure 2: Showing global causes of maternal mortality [5,6].

to one of five complications: haemorrhage, infection, unsafe abortion, hypertensive diseases of pregnancy such as eclampsia, and obstructed labour (Figure 2). While some of the occurrences are predicted during routine prenatal care, most occur spontaneously without warning signs and constitute high risk pregnancies.

Therefore, all pregnant Nigerian women should be considered at risk of these complications. High risk in pregnancy may be predicted in women during prenatal care if they have high blood pressure, gestational diabetes mellitus, pre-term rupture of the membranes, gestation of greater than 42 weeks, or vaginal bleeding amongst others. Further, common determinants of high-risk pregnancies in Nigeria including age over 35 years, anaemia and infections are top-of-the-list contributors to maternal deaths. The majority of the published journal articles were based in institutions and hospitals and may exclude examination of death during at-home deliveries [4].

It is pertinent to note that Nigeria was depicted to have the highest maternal mortality rate in a 2013 report (Figure 3). Therefore, despite the positive trend of decline, it is still imperative to review the factors that influence maternal mortality rate in Nigeria.

Maternal mortality served as an issue in the developing countries which has caught global attention since late 1990s by placement in the MDGs as mentioned above [8]. However, this issue persists in developing countries and the recent efforts in the shape of SDGs have also placed the issue. To eliminate the issue of maternal mortality or to reduce it requires better understanding of its underlying causes.

There have been several factors which contribute towards the severity of MMR specifically in the developing countries which mainly include medical causes. Among the medical causes is the concept of '3 delays' including delay in seeking, receiving and reaching care [9]. This concept identifies that a woman's awareness (knowledge to seek) is one factor, but the accessibility (i.e., ability to reach) to healthcare facility as well as equity and quality (receiving prompt attention) service all come as a package. Perhaps, what needs to be highlighted is this package can come in primary healthcare.

Therefore, understanding and identifying the causes are more important to reducing the maternal mortality rates and saving the life of women. In Nigeria, the concept of 3-delays is seen in incomplete and/or insufficient utilization of antenatal care [10,11]. These factors can be divided broadly into three categories of socio-cultural, economic, and political. Any improvement in how these factors influence primary healthcare will translates into improvements in the reduction of maternal mortality [8].

Effect of maternal mortality

The effects of maternal mortality on socioeconomic development cannot be overemphasised. Maternal mortality which in most cases is

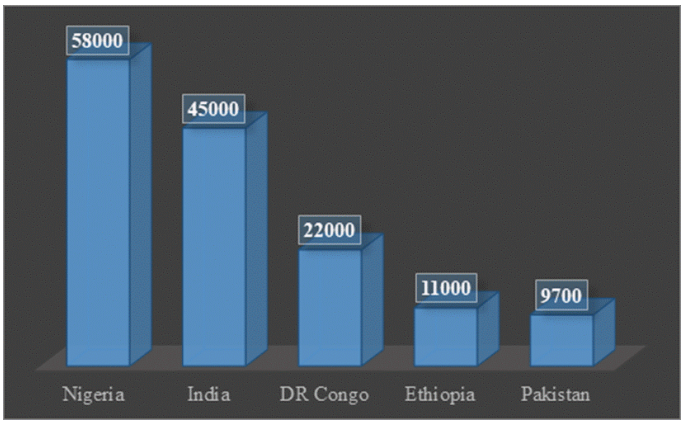

Figure 3: Maternal mortality in Nigeria vs. some other countries [7].

Table 2: Effects of maternal mortality on children, families and society[13, 14].

Potential effects	Children	Families	Society
Demographic	Death	Loss of deceased Dissolution or reconstitution of family/household	Loss of deceased Increased number of one parent households Increased number of orphans
Economic	Increased labour force participation	Reduced productivity of the sick Lost productivity of deceased adults Financial stress from medical costs	Reduced productivity Lost output of deceased adult Economic burden of disease
Health	Illness Injury Malnutrition Poor hygiene	Reduced allocation of labour to health maintaining activities Poor health for surviving household members	Change in the allocation of labour to health activities
Psychological	Depression Other psychological problems	Depression Other psychological problem Grief loved ones	Grief Loss of community cohesion
Social	Social isolation Reduced education Reduced parental supervision	Social Isolation Changes in care for children, elderly and disabled	Reduced quality of life Loss of community

attributable to low level of socioeconomic status is also a major factor hindering sustainable development. Maternal mortality remains a major indicator used in measuring the level of development of a society and the performance of the healthcare delivery system [12]. For instance, it is a given that maternal mortality remains the focus of maternal-and-child health developmental agenda in sub-Saharan Africa countries (Table 2).

Discussion – brief commentary

Maternal mortality is an issue of local as well as global concern. Several numbers of studies have dealt with the issue of maternal mortality particularly focusing on its associated causes other than the medical ones as the social, cultural and economic across the developing world. However, the issue has not been exhaustively explored at the primary healthcare level in Nigeria with its underlying causes so that the local level measures can be adopted to combat it. As indicated on figure 2, bleeding and infection are the leading causes of maternal mortality.

It has remained a concern that the rate of Nigerian maternal and child deaths during birthing are still relatively high, and preventable childbirth behaviour is one of the factors [15,16]. Another important factor is health promotion buoyed by infrastructural developments that facilitate equitable access to the facilities [15].

Of particular interest in this mini-series is the second leading cause of death – infection. For this paper, focus is on environmental hygiene sanitation practices with regards to maternal and child health (MCH). It is noteworthy that open defecation is a public health menace arguably affecting maternal and child health more. At least, this fact has been the basis of research interests [17-20], as well as global and national intervention programs [21-23].

The agenda for maternal and child health advocacy is that all pregnant women and children in Nigeria regardless of their income, location, religion, or sociocultural group have access to care. The vision of primary healthcare promotion includes to provide education and preventive approaches at the local levels [24]. Recent review has highlighted the limitations of primary healthcare in Bayelsa State [25]. What this paper brings to the fore is the need to consider advancement and integration of hygienic infection control awareness at the primary healthcare level as one preventive medicine measure in management of maternal mortality.

Conclusion

Every effort must be made to provide life-saving interventions for pregnant women to advance improvement in reducing maternal mortality. These interventions may include improving primary healthcare services and systems. Given that infections constitute the second most causative factor i.e. after bleeding, health promotion would necessarily need to consider infection control services such as provision of better hygiene behaviour and sanitary facilities. Thirdly, obstetric services need to be accessible, affordable, and available always so that pregnant women can receive service without any of the "3-delays".

Acknowledgement

This was a piece of seminar presentations on contemporary public health issues done as part of academic exercise by POT. First review was by EUN. Second review and articulation were done by OCC.

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