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IMPROVING HEALTH SYSTEM STRUCTURE TO OVERCOME MATERNAL AND NEW-BORN COMPLICATIONS IN NIGERIA: A CASE OF SOKOTO STATE

[Muazu Alhaji Shamaki, Katiman Rostam, and Ashiru Bello]

***Abstract*— This study attempts to look at health system structure and the complications associated with maternal and new-born health services delivery in Sokoto state, Nigeria. Health system has a potential not just of improving people's health but also to protect them against the financial costs of illness and to treat them with self-respect. Various relevant sources of information have been reviewed. These sources include various journals of public health, the federal and state governments' publications on maternal and new-born health assessments among others. The study reveals that (as at 2012), only 4% of public health facilities meet EmOC standards in the state and less than 2% of women nationally deliver by caesarean section, pointing to an unmet need for emergency services both in Nigeria and Sokoto state in particular. Although illiteracy, high fertility, teenage pregnancy, etc directly or indirectly affects maternal and new-born health, the death rate (maternal mortality of 1026/100,000 and <5 mortality rate of 269/1000) (UNICEF) is an indication that much still need to be done in this sector. To abate the situation, international forums on maternal and new-born health need to be readdressed in addition to increasing health facilities and institutional capacity in Sokoto state and Nigeria.**

***Keywords*— Health system, maternal, new-born, obstetrics, Sokoto state**

I. Introduction

Mother's health is inextricably linked to the health of her new-born and maternal mortality has far-reaching medical, social and economic implications for the new-born, family, community and the world at large [8]. Therefore, when mothers are malnourished (as the underweight rate in the North Western region of Nigeria leads with 43%), or receive inadequate antenatal care (ANC) and care during childbirth, they and their babies face a higher risk of disease and premature death.

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Thus, Adedokun [2] explains the rate of maternal, new-born and child mortality in Nigeria is currently at an emergency proportion. Generally, the country is at a point at which every nation serious about development must move decisively. Adedokun further stressed that even if Nigeria cannot meet the MDG 4 and 5 in the few years' time (as is already obvious that it cannot), contextually realistic and achievable targets must be set and pursued diligently. In fact, a nation which allows her women to die in the process of bringing forth live only exists on borrowed time. Therefore to move away from this status, Nigeria needs to improve maternal health and reduce maternal deaths in a more sound and efficient health system. A health system is an organizational framework for the distribution or servicing of the health care needs of a given community which can also be referred to as an organizational framework for the distribution or servicing of the health care needs of a given community, an area, state or a region [5].

In line with this assertion, the three main objectives of a health system are improving the health of the population they serve, responding to people's expectations and providing financial protection against the costs of ill-health. Records have shown that each year in Nigeria nearly one million children die before their fifth birthday and about one-quarter of these children 241,000 die in the first month of life as new-born [7]. Therefore, these rates must be reduced. And reducing these deaths is a crucial step to advancing Nigeria's progress towards Millennium Development Goal (MDG-4). At the same time many of the solutions for new-born deaths link closely to reducing the country's 33,000 annual maternal deaths. Hence, this paper looks at health system structure and the challenges associated with delivery of maternal and new-born health services so as to proffer suggestions to overcome the health menace in Sokoto state and the country at large.

Sokoto State is one of the 36 States in Nigeria which was created on October 1, 1996 [14]. The 2006 national population and housing census returned population figures of 3,702,676 people in the state out of which women constitute 49.7% or 1,838,963.

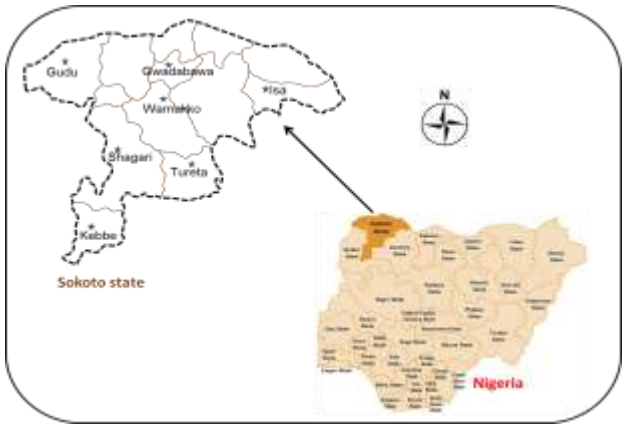

Figure 1 Location of Sokoto state

II. Health System Structure in Nigeria: An overview

In Sokoto State and Nigeria as a whole, healthcare system provides tertiary, secondary and primary-level care, each with varying degrees of capacity and oversight roles [8]. However, Ademiluyi and Aluko-Arowolo [4] asserts that these structures are arranged in a hierarchical order as follows:

A. Primary health care

Primary health care (PHC) by policy arrangements is within the purview of local government and based on the residual operation of local government authority. As such it undertakes mild healthcare cases like treatment for malaria, fever, cold, nutrition disorder, among others. It generally handles milder health problems and health education, as well as infant, maternal and pregnancy matters as well as record keeping, case reporting and patients referral to higher tiers of health facilities. Abdulraheem et al, [1] added that the PHC health services include education concerning prevailing health problems, methods of preventing and controlling them, promotion of food supply and proper nutrition, maternal and child care, family planning, immunization against the major infectious diseases, prevention and control of locally endemic and epidemic diseases and the provision of essential drugs and supplies.

B. Secondary health centre

The next tier in the hierarchy of health structure is secondary health centre. These are usually the general hospitals (GH's) and comprehensive health centres located mostly in the urban and semi-urban areas including local government headquarters in Sokoto state [1]. All general hospitals in Sokoto state are owned and funded by state government and they involved not only prevention of diseases but also the treatments and management of minimal complex cases as well as some maternal services [7]. The Medical and Dental Council of Nigeria requires that there should be a minimum of three doctors who can provide medical, surgical, paediatric and obstetric care in any general hospital [1]. This is a story in the state as it is never real, for instance none or only one medical doctor has been deployed in most of the general hospitals outside Sokoto urban area such as in Isa LGA.

C. Tertiary health centre

Tertiary-level services are highly specialised and focus mainly on curative care, teaching and research [8]. In Nigeria, the federal ministry of health- FMOH is responsible for policy formulation, technical assistance and service provision through tertiary teaching hospitals and federal medical centres. The tertiary health institution mostly includes specialist/teaching hospitals that handles complex health problems/cases either as referrals from general hospitals or on direct admission to its own [1].

Figure 2 Entrance and the labour wards at the Specialist Hospital, Sokoto

Tertiary health institution has common features such as accident and emergency unit, diagnostic unit, wards units, treatment unit and outpatient consultation unit. These units are usually equipped with the necessary facilities and staffed by skilled personnel for example in Sokoto state we have the Usmanu Danfodiyo University Teaching Hospital, Sokoto under the federal government and Specialist Hospital, Sokoto owned by the state. The Teaching hospitals also conduct researches and provide outcomes to the government as a way of influencing health policies [1], [4]. However, to overcome maternal and new-born deaths in Sokoto these centres need to be strengthened in addition to providing more of them. And, presently, these are not only providing services to the state or its neighbouring states but also to patients who come from neighbouring countries such as the Republic of Niger.

III. Health Status in Sokoto State, Nigeria

Health status is one domain of health-related quality of life, among which the population and wellbeing of mothers and new-borns forms the foundation of a strong health system in any society [7]. Amidst Sokoto state and in general Nigeria's immense human and natural resources, little progress is being made in terms of health status and survival of children and mothers (see Table 2). In 2000, the WHO ranked the performance of Nigeria's health care system 187 among 191

United Nation's member states [6]. This was not encouraging at all. In fact, the maternal health indicators fare more poorly in the north especially in Sokoto (see Table 1). This is why only 10-17% of women in North West Nigeria delivered in facilities compared to over 80% in the South East [13]. The commitment of the state government to providing health services to its citizens has not been worthy of praise in recent times. This is due to the absence of a comprehensive analysis on new-born health issues, the challenges facing new-borns and limited opportunities to save new-born lives.

Table 1 reveals that during the year 2012, Sokoto there are 20 Hospitals, 708 Primary Health Care facilities/Clinics/Dispensaries, 34 registered private health facilities and 3 federally owned Tertiary Hospitals including the Teaching Hospital. And in terms of health workers the state has just little over 100 Doctors, 525 Nurses and 432 Midwives scattered within the state while its projected population is over 4 million [14]. Unfortunately over 50% of these PHC facilities that are supposed to make the ward health system functioning are in desperate need of renovation, essential drugs, consumables and equipment. Similarly, in terms of cleanliness, their sanitary conditions are completely opposite of what they are meant for due to scarcity of running water and waste disposal system needed to maintain good conditions. Indeed, it is a pity and has become a tradition now that almost all the PHC clinics in the state are run as day clinics due to lack of electricity even when most women go into labour and deliver in the night. And again, the government itself has confessed that low number of available staff per facility, their low skills and poor working conditions affect their motivation contributing to the poor service delivery which increases more incidences of maternal and new-born deaths in the area [14].

TABLE 1 Health status indicators for Sokoto State

S/ No.	Indicator	Status in 2011
1	Infant mortality rate	102/1000
2	Under - five mortality rate	203/1000
3	Proportion of one-year old children immunized against measles.	69%
4	Maternal mortality	900/100,000
5	Proportion of births attended to by trained health personnel.	20%
6	HIV prevalence among 15-24 years old (women)	3.3%
7	Percentage population aged 15-24 years with comprehensive knowledge of HIV and AIDS prevention and methods,	45%
8	General hospitals	20
9	PHC's/clinics/dispensaries	708
10	Health facilities offering comprehensive emergency obstetric care	30
11	Health facilities providing basic obstetric care	102
12	Private health facilities	34
13	Tertiary health facilities	3
14	Number of Doctors	≥100
15	Nurses	525
16	Midwives	432
17	Total population	3.7 in 2006
18	Proportion of households with access to safe drinking water	39%
19	Proportion of households with access to basic sanitation	Urban 39% Rural 35%

Source: SSG, 2012

IV. Challenges in Maternal care and New-born Survival

Presently, studies have shown that 15% of all pregnant women develop obstetric complications globally and most of which are unpredictable [7]. To reduce this rate, services for emergency care must be available and efficient in order to prevent maternal and/or neonatal deaths. A basic emergency obstetric care (BEmOC) facility which can administer parenteral antibiotics, oxytocic and anticonvulsants to women and new-born must be provided [7]. And, to do that a standard has to be maintained. The Nigerian BEmOC standard includes two additional signal functions i.e. 24-hour service coverage with a minimum of four midwives per facility [7]. Moreover, the World Health Organisation recommends that for every 500,000 population, the minimum acceptable level is five EmOC facilities with at least one of which provide comprehensive care. In view of this, the Sokoto State Government [14] reveals that there are only four maternity centres in Sokoto state with an estimated population of about 4million in 2012. Thus, this standard is difficult to be achieved in Sokoto state and Nigeria in general. In fact, the FMOH/UNFPA shows that, EmOC survey in 2003 reveals only Lagos state met the standard of four BEmOC facilities per 500,000 people, combining both public and private healthcare providers [7]. Similarly, even with the available facilities, many of them do not meet the national staffing standard for BEmOC in Nigeria and Sokoto. This is because many health facilities generally lack adequate material resources, as well as basic infrastructure such as water and electricity [7].

The Federal Government of Nigeria [7] reveals that in Nigeria almost 40% of women give birth with just a relative or no ANC attendant present at all and 39% of deliveries are with a skilled birth attendant (doctors, nurse/ midwives or auxiliary midwives). Although, the traditional birth attendants assist 22% of births while proportion of home births is approximately 90% in Sokoto State, North West and 87% in the North East zones of Nigeria [7]. The FGN further shows that the quality of care in most health facilities is often low, a situation that increases mortality. Furtherance to that, although a 24-hour service is available in most tertiary and secondary health facilities, very few primary health centres in the country offer round-the clock services [7]. In addition, only 4% of public health facilities meet EmOC standards and less than 2% of women nationally deliver by caesarean section in Sokoto state, pointing to an unmet need for emergency services [7]. Similarly, only 10% of midwives are trained in neonatal resuscitation and fewer are trained in the immediate care of premature babies thus, reflecting more lacking of emergency care for new-borns in the whole country.

In order to understand these challenges clearer so as to overcome them, we need to know the various causes of death of child and new-born in Sokoto, Nigeria. According to the Child Health Epidemiology Reference Group (CHERG), the

direct causes of under-five deaths after the neonatal period include preventable infectious diseases such as malaria, pneumonia and diarrhoeal diseases despite the fact that one-third of all under-five deaths have malnutrition as an underlying cause. In the case of new-born, the Federal Government of Nigeria [7] reveals that the major causes of death in the first month of life in Nigeria are intrapartum-related injury, complications of preterm birth, severe infections including tetanus and neonatal jaundice. Other maternal conditions that directly or indirectly impact new-born health include illiteracy, gender inequality, high fertility, teenage pregnancy, early marriages and other harmful traditional practices such as female genital cutting and hot-bath [8].

TABLE 2 Numbers of deaths of Nigerian mothers, babies and children

Population	**151, 212,000 (2011)**
Annual births	6, 028,000
Mothers	
Maternal mortality ratio	545
Annual number of maternal deaths	33,000
New-borns	
Neonatal mortality rate	40
Annual number of neonatal deaths	241,000
Children	
Under-five mortality rate	157
Annual number of under-five deaths	946,000

Source: [7]

The Federal Ministry of Health reveals that premature pregnancy and motherhood pose considerable risks to the health of girls. And, the younger a girl is when she becomes pregnant, the greater the health risks for herself and her baby. At the same time, early marriage and pregnancy, HIV and AIDS, sexual violence and other gender-related abuses increase the risk that adolescent girls will drop out of school. This entrenches the vicious cycle of gender discrimination, poverty and high rates of maternal and neonatal mortality in the state. To overcome the problems, educating girls and young women is one of the most powerful ways of breaking the poverty trap and creating a supportive environment for maternal and new-born health in Sokoto state. Coincidently, the United Nations mission in Nigeria is committed to saving the lives of women, new-borns and children through a coordinated effort to:

1. *work closely with governments at all levels, development partners, civil society, communities and families; combining efforts to maximise impact and using existing infrastructure to make the best use of available resources and avoid unnecessary duplication*

2. provide support in improving the legislative environment and policy implementation and addressing human resource constraints. This will therefore, expands coverage of essential services and stronger health systems. And it encompasses strengthening family planning, institutional delivery, community-based new-born care, and promoting healthy behaviours such as exclusive breastfeeding and care-seeking for illness [8].

Another challenge leading to low usage of health facilities that increases rate of maternal and new-born deaths that is worth mentioning here is maternal age where the relationship between mother's age and probability of an infant dying is u-shaped. Findings by Mohamed [10], reveals that a baby born to a very young mother is exposed to higher risk of mortality due to physical immaturity of the mother. He added, this is because the reproductive organs of the mother are not matured enough for pregnancy and can cause problems in both pregnancy and in child's infancy if the pregnancy ends with a livebirth. On the other hands Mohamed [10] also asserts that a baby born to older mothers may be exposed to a high risk of mortality through pregnancy complications, such as placenta previa, hypertension and diabetes which could lead to a premature birth as well. Although the former is most prevalent in Sokoto state especially among uneducated rural dwellers, even the latter is a likely situation due difficulty of getting husbands by some women. In Peninsular Malaysia it has been confirmed that babies born to very young mothers (<19 years) are more likely to die in the first month of life, while babies born to mothers older than 40 years are more likely to die in the first month and the second six months of infancy [10]. Similarly, a conception shortly after birth can lead to the termination of production of mother's milk and thus ending breastfeeding. So also, prolonged lactation induces postpartum amenorrhea and hence, an increase in the likelihood of longer intervals between births (Mohamed 1995).

v. The way forward

The organizational structure of the Nigerian health care system suffers from lack of specificity and ambiguities in the definition of roles and responsibilities of the three tiers of the system, the Federal, State and Local Government levels [3]. Although, before the introduction of Safe Motherhood Programme, maternal and child health packages in Nigeria addressed care for the mother and the child separately, which result in new-born care issues and even care for the mother not fully being addressed. According to Lema, [9], there have been several international forums aimed at addressing new-born, maternal and child health and their well-being over the past 50 or so years. The forums could help in identifying and designing appropriate interventions at national, district or community levels and can be evaluated and or replicated in other areas with similar situations. Some of the various efforts made to improve new-born, maternal and child health especially in the developing countries which bears the greatest burdens thereof and the recommended strategies/interventions by Lema, [9] are stated below:-

i) *The Maternal and Child Health (MCH) programme*: Started in the late 1960s, to which Family Planning (FP) was later added and more recently repositioned as Maternal, New-born and Child Health (MNCH) Programme in recognition of the specific needs of the new-borns and its contribution to under-five mortality and morbidity especially in the developing countries.

ii) *The Alma-Ata Declaration (1978)*: It underlined the importance of Primary Health Care (PHC), which was adopted by the majority of developing countries as key to achieving the

goal of Health for all by year 2000. During this declaration, maternal and child health was recognised as a major public health concern that needed priority action. Hence, this affirmed access to basic health services as a fundamental human right aimed to reduce maternal and new-born deaths.

iii) *The Safe Motherhood Initiative (SMI) (1987)*: The international community made a call to reduce maternal mortality ratio (MMR) by 50% between 1990 and 2000. This led to the launch of the initiative which was seen as major milestone in the race to reduce the burden of maternal mortality throughout the world particularly in the developing countries. The main strategies for the implementation of the initiative focused on prevention and detection of risk factors for maternal death from different causes. In this initiative, strategies and interventions for the reduction of maternal morbidity and mortality often referred to as The Pillars of Safe Motherhood.

iv) *The UN World Summit for Children (1990)*: Attended by 71 Heads of State and Government and 88 other Senior Officials at Ministerial Level. The summit adopted a Declaration on the Survival, Protection and Development of Children and a Plan of Action for Implementing the Declaration, which noted that survival, protection and development of children is a pre-requisite for the future development of humanity. Similarly ever since that time, the inter-relationship between maternal health and child health and called for special attention to the former has been emphasized.

v) *The WHO Making Pregnancy Safer Initiative (2000)*: In this initiative, access to EmOC is a key element. Similarly, the referral system was considered essential in ensuring access to EmOC, and among the activities for strengthening the system. Identification of communication and equipment needs for referral at the community and district levels and procurement and installation of appropriate communication equipment including 2-way radios and emergency transport.

VI. Conclusion

We have seen so far that there are 20 Hospitals, 708 Primary Health Care facilities/Clinics/Dispensaries, 34 registered private health facilities and 3 federally owned Tertiary Hospitals including the Teaching Hospital in Sokoto state. Also, health workers numbering over 100 Doctors, 525 Nurses and 432 Midwives are equally scattered within the state. In spite of these however, there are still great challenges in maternal and new-born in Sokoto state. In fact, only 4% of public health facilities meet EmOC standards and less than 2% of women nationally deliver by caesarean section, pointing to an unmet need for emergency services in Nigeria and Sokoto state is not an exception. The intrapartum-related injury which remains a major cause of new-born death for over 800,000 new-borns globally each year and which also left many more babies with permanent disabilities is also an issue in the state. In order to improve the situation, international forums aimed at addressing new-born, maternal and child health and their well-being over the past 50 or so years needs to be refocused in Sokoto state and Nigeria.

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