

## **Factors Affecting Maternal Mortality In Sokoto State, Nigeria**

*Faktor-faktor yang Mempengaruhi Kematian Semasa Hamil di Negeri Sokoto, Nigeria*

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### **Abstract**

Being a sensitive development indicator with unacceptably large cross-country differentials, maternal mortality was of great concern in both the International Conference on Population and Development (ICPD) Programme of Action and the Millennium Summit, and improving the maternal health and reducing deaths due to maternal causes were among the adopted goals and targets in both ICPD and the Millennium Development Goals (MDGs). Maternal death is defined as a death like no other. The impact of maternal death to the families and communities is devastating especially for surviving children. This article is aimed to discuss these causes of death, with special attention given to the level of health facility provision, access to, and utilisation of healthcare services that are directed towards addressing maternal health issues in Sokoto state, north-western Nigeria. Relevant data was obtained from various secondary sources such as the National Demographic and Health Survey (NDHS) and United Nations Population Funds (UNFPA). It was concluded that most maternal deaths are avoidable as medical solutions to prevent or manage the direct or fatal causes are well known. Similarly, reducing poverty and provision of basic infrastructure will improve access to health service delivery thereby reducing the rate of maternal mortality.

### **Keywords**

Population dynamics, development, maternal mortality, Sokoto state

### **Abstrak**

Sebagai penunjuk pembangunan yang sensitif kepada perbezaan besar yang merentas negeri yang luas, kematian semasa hamil merupakan satu kebimbangan yang besar untuk di kedua-dua Program ICPD Tindakan dan Sidang Kemuncak Milenium (MDG) dan meningkatkan kesihatan ibu dan mengurangkan kematian disebabkan oleh kehamilan adalah antara matlamat dan sasaran yang diguna pakai oleh kedua-dua ICPD dan MDG. Kematian semasa hamil ditakrifkan sama seperti kematian yang lain. Kesan kematian semasa hamil kepada keluarga dan masyarakat terutama bagi kanak-kanak yang masih hidup sangat tragik. Kertas kerja ini bertujuan untuk membincangkan sebab-sebab kematian dengan perhatian khusus diberikan kepada tahap penyediaan kemudahan kesihatan, akses kepada dan penggunaan perkhidmatan

penjagaan kesihatan yang ditujukan untuk menangani isu-isu kesihatan ibu hamil di negeri Sokoto, Nigeria Barat. Data yang berkaitan diperolehi daripada pelbagai sumber sekunder seperti Survei Demografi dan Kesihatan Negara (NDHS) dan Tabung Kependudukan Bangsa-Bangsa Bersatu (UNFPA). Kesimpulannya didapati kebanyakan kematian ibu hamil boleh dielakkan kerana penyelesaian perubatan bagi mencegah atau menguruskan sebab-sebab kematian telah diketahui umum. Begitu juga, mengurangkan kadar kemiskinan serta penyediaan infrastruktur asas boleh mempertingkatkan akses kepada perkhidmatan kesihatan dan dengan itu dapat mengurangkan kadar kematian semasa hamil.

### ***Kata kunci***

Dinamik penduduk, pembangunan, kematian ibu, Sokoto

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## **Introduction**

This article will discuss the access and utilisation of healthcare services in Sokoto state, north-western Nigeria focussing on the level of health facility provision, access to, and utilisation of healthcare services that are directed towards addressing the issues. Maternal mortality is the death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration of the pregnancy, from any cause related to or aggravated by the pregnancy excluding all accidental causes of death. Because a large number of maternal deaths occur late or later than 42 days after termination of the pregnancy, some definition extend the period up to a year after termination of the pregnancy (Ebeniro, 2012). Maternal death results from complications of the pregnancy (pregnancy, labour and post-delivery) from interventions, omissions, and in-correct treatment from a chain of events arising from any of the above. In addition, maternal death may be due to previously existing diseases or diseases that developed during pregnancy, and not due to obstetric causes (Ebeniro, 2012).

The Department for International Development- DFID (2008) defines maternal death as a death like no other. The impact of maternal death to the families and communities is devastating especially for surviving children. A new born baby is three to ten times more likely to die within its first two years without its mother (DFID, 2008). Similarly, the International Statistical Classification of Diseases and related health problems 10<sup>th</sup> revision (ICD-10), under the auspices of World Health Organisation defines maternal death as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

The International Conference on Population and Development (ICPD) in 2004 in Cairo marked the adoption of the Programme of Action which addressed population issues in a broader context of reproductive health and development. Also, at the

Millennium summit in 2000, world leaders unanimously adopted the millennium declaration which led to the articulation of eight specific Millennium Development Goals (MDGs). Being a sensitive development indicator with unacceptably large cross-country differentials, maternal mortality was of great concern in both the ICPD Programme of Action and the Millennium summit, and improving the maternal health and reducing deaths due to maternal causes were among the adopted goals and targets in both ICPD and the MDGs (WHO, UNFPA, 2004). Since, no doubt population dynamics is a function of three major components of fertility, mortality and migration, this paper looks at maternal mortality as an essential component or determinant of population dynamics in Sokoto State.

The attainment of the 5<sup>th</sup>MDG in Nigeria is extremely far reaching by the year 2015 with the level of maternal health care in the country. Annually, an estimated 52,900 Nigerian women die from pregnancy related complications, out of a total of 529,000 global maternal deaths. A woman's chance of dying from pregnancy and childbirth in Nigeria is 1 in 13<sup>2</sup> (Galadanci *et al.*, 2010). Maternal conditions were second only to HIV/AIDs in terms of women's death Worldwide and third in terms of disability-adjusted life-years (DALY) for women aged 15-44 years based on 2005 global burden of diseases estimates (Koblinsky *et al.*, 2012). Maternal conditions contributed to 2.7% of deaths among women worldwide and 12% of deaths among women aged 15-44 years. However, more than 275,000 women are estimated to die each year in pregnancy and childbirth (Koblinsky, *et al.*, 2012).

### **Study Area: Sokoto State**

Sokoto State is one of the seven states that constitute the north western zone of Nigeria and a product of a number of political re-alignments since 1804 when the Sokoto caliphate was founded by the renowned Islamic scholar, Shehu Danfodiyo. According to Nigeria Human Development Report- NHDR, (2009), the human development index indicates that Sokoto State life expectancy is 51 years while the adult literacy rate was 67.4%. The state is one of the 36 States that make up the Federal Republic of Nigeria. It was created from the former North Western region in 1976 (Swindell, 1983:67). Since then, Sokoto urban area was the capital of Sokoto State.

The state capital, Sokoto is bound by Kware local government to the north, Wamakko to the west and Dange-Shuni to the east. It lies geographically between longitude 11° 30" to 13° 50" E and latitude 4° 00" to 6° 00" N (Shamaki, 2006). It share boundaries with the French speaking West African States of the Republic of Niger to the north and west and to the east and South, with the Nigeria's States of Kebbi and Zamfara respectively (see Figure 1). Based on 2006 population census, Sokoto state has an estimated total population of 4.1 million (in 2011) with a surface area of 32,000 s/km<sup>2</sup> and a population density of 128 persons per km<sup>2</sup> (Iliya, *et al.*, 2011). In its total population, the women child bearing age constitute about 20% while children under 15 years make up 40% (UNFPA, 2010).

Unfortunately, in terms of health there are only 538 health facilities in Sokoto state. These are distributed within the 3 tiers of health care delivery systems that include two tertiary health facilities owned by the Federal Government; Usmanu Danfodiyo University Teaching Hospital (UDUTH) located in the metropolis and the Federal Neuro-Psychiatric Hospital at Kware. The state government has a Specialist Hospital in Sokoto and 18 General Hospitals fairly distributed within 23 local government areas. The remaining are Primary health Care (PHCs), clinics and dispensaries run by the local government councils.

The present analysis was based on data obtained from various secondary sources. These include reliable international agencies such as the United Nations Population Funds (UNFPA), Nigeria Human Development Report (NHDR), Millenium Development Goals (MDGs), National Demographic and Health Survey (NDHS) among others.

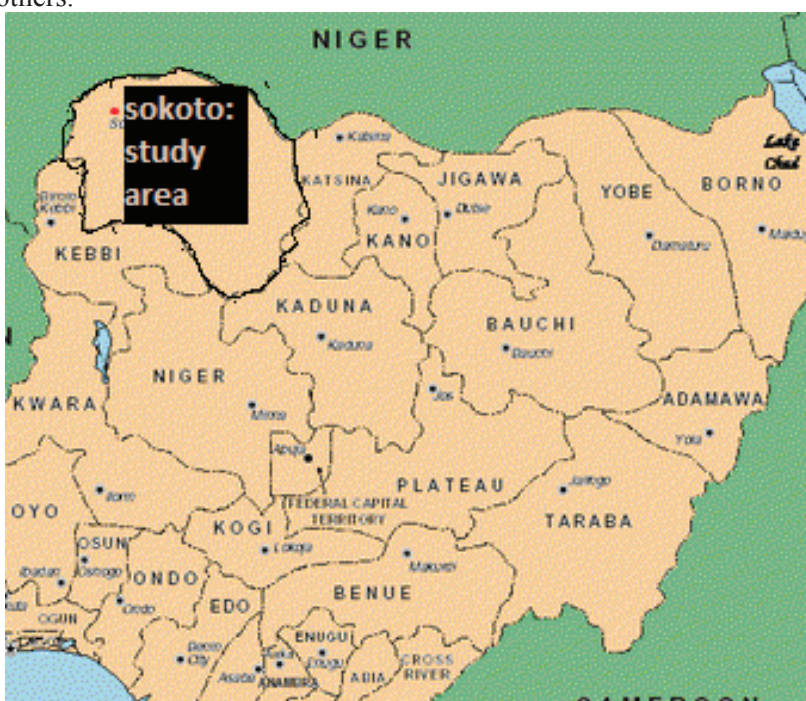


Figure 1 Map of Nigeria showing the States and capitals

## Methodology

This study reviews various and current secondary data and information from relevant source that include United Nation Population Funds-UNFPA, targeted State High Impact Project of the USAID, Human Development Report Nigeria, World Health Organisation, National Population Commission and Department for International Development- DFID. Information also gathered from various tertiary sources such as relevant text books, academic researches and relevant journal article particularly

West African Journal of Medicine and African Journal of Reproductive Health. Based on the information obtained, it is established that most maternal deaths are avoidable as medical solutions to prevent or manage the direct or fetal causes are well known. Thus, skilled care at birth backed by emergency obstetric can make the difference between life and death. Therefore, high rate of maternal mortality in Sokoto state can be reduced by putting bold steps on ground to change human behaviour and attitude towards health facilities utilisation.

### **Trend of Maternal Mortality in Sokoto**

Maternal mortality remains a serious concern in Nigeria especially in the Northern region. In 2005, the estimated total global maternal deaths recorded were 536,000, but in Nigeria, while having only 2% of the world's total population, it accounted for 10% of the world total maternal deaths in 2010 (Ebeniro, 2012). In fact Nigeria's maternal mortality rates exceed 1,000 deaths per 100,000 live births and are much higher than the African continent average of 800 deaths per 100,000 live births (Ebeniro, 2012). This rate of maternal mortality in Nigeria is highest in northwest geopolitical zone which comprised Sokoto state.

In Sokoto, a ten year study of maternal mortality from January 1990 to December 1999 by Audu, *et al.*, (2002) reveals that there were 197 maternal deaths and 9,158 live births. On average, there were about 20 maternal deaths and 916 live births in each year within the period of the research. The maternal mortality ratio was 2,151/100,000 live births. Furthermore the mean age at dead was 27 years. The risk factors included nulliparity, poverty, illiteracy and lack of parental care. The 2009 Women and Health Report of the World Health Organisation lament that women's ill-health and its consequences are poorly defined, despite women live longer than men, their lives are not necessarily healthy. Hence, Koblinsky, *et al.*, (2012), reveals that maternal deaths and disabilities are considered a living contributor to the burden of diseases among women.

### **Causes of Maternal Deaths**

Women die from a wide range of direct and indirect causes in pregnancy, childbirth or the postpartum period. Globally, about 80% of maternal deaths are due to direct causes (WHO, 2008). According to (Audu, *et al.*, 2002), most maternal deaths caused by ruptured uterus (27%), haemorrhage (14%), obstructed labour (13%), sepsis (8%), eclampsia (21%) and complications from unsafe abortion (1.5%) are direct causes. Similarly, a growing proportion of deaths are attributed to indirect, non-obstetric conditions such as infectious diseases (HIV/AIDS, malaria and tuberculosis, and hepatitis -7%), chronic diseases (of the heart, lung and liver- 7%), gender-based violence and multiple problems faced by pregnant women in emergency situation (UNFPA, 2004). While the obstetric complications (direct causes) of pregnancy and delivery are not predictable or preventable, they are all treatable (see Table 1).

**Table 1** Causes of maternal deaths

Causes	No	Percentage
Ruptured Uterus	50	27
Eclampsia	41	21
Haemorrhage	27	14
Obstructed labour	25	13
Sepsis	15	8
Anaemia	9	4
Liver disease	7	3
Ectopic pregnancy	3	1.5
Abortion	3	1.5
Others	15	7

Source: Audu *et al.*, (2002)

**Table 2** Number of obstetric complications

Residence	Facility type	Referrals for pregnancy related complications	Persons transfused	Obstetric complications in 3 months
Rural/urban	PHC	19	121	219
	GH	0	545	127
	MCH	9	0	12
	CHC	0	0	0
	Others	65	0	10
	Total	93	666	396
Rural	PHC	16	121	216
	GH	0	200	28
	MCH	0	0	0
	CHC	0	0	0
	Others	64	0	10
	Sub-Total	80	321	254
	% rural	86.0	48.2	69.0
Urban	PHC	3	0	3
	GH	0	345	99
	MCH	9	0	12
	CHC	0	0	0
	Others	1	0	0
	Sub Total	13	345	114
	% urban	14.0	51.8	31.0

Source: UNFPA (2010)

In order to reduce the rates of maternal deaths in Sokoto, the UNFPA, (2009) collected data on records of obstetric complications for three months from July to September, 2009 and the results are shown below in Table 1. The table reveals that a total of 368 obstetric complications were observed in the 3 months, out of which 254 (69.0%) were seen in rural areas compared to 144 (31.0%) in urban areas. A total of



666 persons were transfused in the last three months, out of which 321 (48.2%) were in rural areas as against 345 (51.8%) in the urban areas. And 93 referrals for pregnancy related complications were seen, among whom 80 (86.0%) were in rural areas while only 13 (14.0%) were in urban areas (UNFPA, 2010).

The distribution of the number of complications seen for the three months by the types of facilities show that 127 (34.5%) of obstetrics complications were reported in the GHs, while 241 (65.5%) were reported by the Primary facilities. More than half (51.8%) of the persons transfused were seen in the urban facilities compared to 48.2% seen in the rural facilities. Meanwhile, 86.0% of referral for pregnancy related complications were seen for the last 3 months in the rural areas compared to 14.0% in the urban areas. These results imply that there were variations in the number of complications seen for the last three months between the types of health facilities as well as between the rural and urban facilities in Sokoto (UNFPA, 2010). However, the data in Table 3 indicate that ante/post-partum haemorrhage and obstructed labour were the most frequently reported to be the most re-occurring types of obstetric complications by the supported facilities.

**Table 3** Types of obstetric complications

S/no	Types	Frequency
1	Ante/post-partum haemorrhage	10
2	Obstructed labour	3
3	Pre-Eclampsia/Eclampsia	1
4	Ante/post-partum haemorrhage, Obstructed labour, Post-partum Sepsis, Ectopic pregnancy, and Ruptured uterus	1

Source: UNFPA (2010)

The supported facilities in the State should therefore be strengthened to tackle these types of obstetric complications. Similarly, programme intervention should be tailored towards awareness on the implications of obstructed labour and Ante/post-partum haemorrhage (UNFPA, 2010). In most developing countries, such as Nigeria maternal mortality reflects failing health systems as well as a lack of social and political commitment to the issue. Thus, working for the survival and well-being of mothers is a moral and human right imperative, one that has implications in terms of social and economic progress (UNFPA, 2004).

### **Factors Affecting Maternal Mortality**

The extent of maternal mortality in a population is essentially the combination of two factors: (i) the risk of death in a single pregnancy or a risk live pregnancy and (ii) the fertility level, which is, the number of pregnancies or births that are experienced by

women of reproductive age (WHO, 2010). In order to reduce the impact of maternal death and improve maternal health in the state the provision of services, access and utilisation, workforce in the health facilities and access to child spacing programme in the state have been reviewed as follows:

### **Levels of provision of ANC, delivery care and PNC services**

There are a number of healthcare services provided by facility types in Sokoto state but how frequently the services were rendered? These services include the Antenatal care (ANC), Postnatal care (PNC), delivery, child welfare, family planning, HIV counselling and testing, immunisation and so on. The facilities that offer these services include PHC, GHs and few others that are distributed in both rural and urban areas of the state (UNFPA, 2010).

Regarding the health of the women, UNFPA, (2010) reveals that on the average, 86.2% each of the supported facilities in the State offered ANC and PNC services while 89.7% provided delivery care services. These suggest that more facilities offered delivery care services than ANC and PNC services. It also reveals that ANC services were provided on weekly basis in 16 facilities (55.2%); on demand basis in 6 facilities (20.7%) and on daily basis in 3 facilities (10.3%). Similarly, PNC services were offered daily in 6 facilities (40.0%); weekly in 6 supported facilities (40.0%) and on demand and fortnightly 1 facility (6.7%) each. These suggest that maternal health appears as one of the primary focus of all supported health facilities in the state. The results on the provision of ANC, delivery care and PNC services also offers great opportunities and potentials for the integration of RH/FP/HIV services. However, the proportion of health facilities that provide ANC and PNC services were lower than the percentages of facilities that provide only delivery care services. This suggests that there were facilities that offered delivery care services without ANC and PNC services; which depict a break in the continuum of maternal health care. It is also means that some delivery care services were probably those associated with delivery complications, which could explain why higher percentages of GHs offered delivery care services (UNFPA, 2010).

### **Access to and utilisation of maternal facilities**

Although the maternal mortality rate in Northern Nigeria is one of the highest in the world TSHIP, (2010), records have shown that the access to maternal services is not very encouraging in Sokoto. The situation as reported in the NDHS, (2008) shows that 95.3% of women of reproductive age (15-49 years) who delivered within the five years of the survey had home delivery and only 4.4% in a health facility. Also only 2.0% had intermittent preventive treatment (IPT) during pregnancy, 13.0% had iron supplements in the previous pregnancy, and 0.3% had anti-helminths. Only 18.0% of the pregnant women who attended ANC had information on the danger signs of pregnancy and



6.8% had two doses of tetanus toxoid (TT) in their last pregnancy (NDHS, 2008; TSHIP, 2010).

In terms of utilisation 60.0% of women (15-49 years) had one or more challenges accessing health care. These, included lack of money to pay for services, non-availability of provider at the facility and where a male provider is available there is reluctance to visit such provider, and the perennial lack of essential drugs in the facilities (NDHS, 2008; TSHIP, 2010). Table 4 highlights the indicators of health facility assessments on staffing, infrastructure and maternal health services in Sokoto state.

**Table 4** Indicators of Health Facilities Assessments

Staffing	Indicator	%	Sample size
1	% of health facilities that have CHEWs on staff	91.2	124
2	% of health facilities that have nurses/midwives on staff	16.1	124
<b>Infrastructure</b>			
3	% of health facilities that have access to five key infrastructure (water sources, functioning latrine/toilet, electricity, availability of generator as back-up power sources and medical waste disposal	13.7	124
<b>Maternal Health Services</b>			
4	% of health facilities that offer maternal services	58.1	124
5	% of health facilities that offer ANC services, of those that offer maternal services	98.6	72
6	% of health facilities that offer delivery and postnatal care services, of those that offer maternal services	84.7	72
7	% of health facilities that provide AMTSL (use of oxytocin, uterine massage and control cord traction), of those that offer PNC/delivery services	47.5	61
8	% of health facilities that provide treatment of eclampsia (use of magnesium sulphate, diazepam, and anti-hypertensive drugs), of those that offer PNC/delivery services	1.6	61
9	% of health facilities that provide treatment of postpartum haemorrhage (use of egometrin, oxytocin, and antishock garment), of those that offer PNC/delivery services	8.2	61
10	% of health facilities that perform essential new-born care (use of clean cord care, drying and wrapping, and immediate breast feeding), of those that offer PNC/delivery services	77.0	61

Source: TSHIP-USAID (2010)

### **Workforce on the services facilities**

To enhance access and utilisation of maternal services in Sokoto state, the National Primary Health Care Development Agency (NPHCDA) established the Midwives Service Scheme (MSS) to mobilise newly qualified, unemployed and retired midwives and deployed them for one year to understand health facilities, especially in rural communities. However, the MSS scheme has met some challenges. Many midwives have either resigned before their year of service is up or simply refused to be posted in rural areas because of housing problems. Housing was non-existent or in very poor condition especially in the rural areas.

To improve the situation TSHIP, (2011) successfully advocated to the state Ministry of Local Government which directed all Local Government Councils to allocate one house to midwives, while TSHIP complemented the government's effort by renovating staff houses along health facilities. So far ten houses attached to PHCs- Wauru, Gawakuke, Yartsakuwa, Wababe, Danchadi, Salame and Gagi as well as Dagawa dispensary have been renovated and now occupied by service providers. Midwives posted to these facilities are now motivated to provide 24 hours services. In fact, health facilities statistics show that the number of antenatal care (ANC) clients at PHC Wauru increased by 61% from 90 before renovation to 145 after renovation in April, 2011. Similarly deliveries have increased by 58% and family planning clients by 71%. The availability of 24 hour services of PHCs in Wauru means women have access to delivery and child care services during emergencies, especially if they occur at night.

### **Access to child spacing programme**

As part of measures to control population and reduce rates of maternal death, the Targeted States High Impact Programme in collaboration with the State Ministry of Health has identified committed and influential persons from various organisations and professional fields and engaged them as child spacing champions (TSHIP, 2010). At the state level, 15 influential people in Sokoto have been trained as champions. There is a plan to initiate similar procedure at zonal level to reach out the wider audience so as to reduce rates of mortality in both rural and urban areas. The champions are to advocate for developing policies that encourage child spacing. They were trained using an evidence based advocacy tool called RAPID- Resources for Awareness of Population Impact on Development. This model uses demographic projection software to establish the future needs of infrastructure and family planning commodities.

In Sokoto, child spacing services are traditionally provided through secondary and middle level PHC facilities which are mostly located in urban and semi-urban areas. These facilities provide services to about 27% of the state's population (NDHS, 2008). Up to 581 of 716 health facilities in the state are dispensaries (low-level health facilities which mostly provide routine immunisation and treatments of minor ailments and are

mostly located in the rural areas). In Nigeria the northern part is having less skilled health workers due to low literacy levels and poor health worker training facilities particularly in Sokoto state (TSHIP, 2011). As such, to expand the provision of child spacing services to reach the underserved rural population, 409 community health extension workers were trained between March 2010 and May 2011 in the provision of basic child spacing services such as counselling, pills and injectable.

The workers comprised up both males and females staff but the males constitute a larger proportion compared with their female counterparts due to their levels of literacy. Overall literacy level in the state is very low with only 9% for women and 45% men. Eighty seven percent of women are without education compared with 48% of men. This limits the number of females who have access to training as skilled health workers. The use of male services providers to provide child spacing is unusual in northern Nigeria because of sociocultural and religious taboos. However, preliminary findings of rapid focus group discussion aimed at creating a better understanding of the acceptability of male CHEWs in the provision of child spacing methods by the community indicates that husbands in the area preferred the services of the male CHEWs. According to them, they provide more accurate information and are more culturally sensitive (TSHIP, 2011).

## Conclusion

Maternal mortality rate in Sokoto is high and it is mainly due to direct causes and obstetric complications particularly in the rural areas. However, this study concludes that most maternal deaths are avoidable as medical solutions to prevent or manage the direct or fetal causes are well known. By implication, this means skilled care at birth backed by emergency obstetric can make the difference between life and death. Hence, health facilities in the State should therefore be strengthened to tackle these types of obstetric complications. In addition there is need by the government to provide adequate infrastructure and reduce poverty level particularly in the rural areas.

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