



## ORIGINAL ARTICLE

# Identifying Barriers to Utilization of Basic Emergency Obstetric and New-Born Care Services in Jigawa State, North-western Nigeria: A Qualitative Study

Babandi ZS,<sup>1,2</sup> Wakawa MM,<sup>2</sup> Suleiman AG,<sup>1,2</sup> Abubakar BG,<sup>3</sup> Dahiru T.<sup>1,2</sup>

1Department of community medicine, Ahmadu Bello University, Zaria, Nigeria

2 Department of community medicine, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria

3 Department of community medicine, Usman Danfodio University Teaching Hospital, Sokoto, Nigeria

### Keywords

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### ABSTRACT

**Background:** Maternal mortality has remained high in northern Nigeria despite decades of effort aimed at reducing it. The number of women who deliver in Emergency Obstetric Care (EmONC) facilities is low. This study explored the barriers to utilizing Basic EmONC services in Jigawa State.

**Methods:** A qualitative study was conducted among mothers of children under five years through 12 Focus Group Discussions. A purposive sampling technique was used to select participants who were categorized based on age (below 35 years, 35 years and above) and prior utilization of EmONC services. Content analysis along thematic lines was done and the findings were reported in narrative form.

**Results:** The mean age of participants was  $31 \pm 6$  years. The majority of participants had primary education and most were unemployed. Most of the participants identified obstetric danger signs, however, they opine that medical attention should be sought only when complications become serious. Participants in all groups unanimously said decision-making for seeking medical care rests with the husband and occasionally the mother-in-law. Barriers to seeking care identified by participants include lack of money, distance to the nearest health facility, fear of embarrassment by healthcare workers, and insecurity among others.

**Conclusion:** Most participants were knowledgeable of obstetric danger signs, but with low risk-perception towards obstetric complications. The Jigawa State government should engage in a robust education campaign on the need for early decision-making to seek care as well as strengthen its women empowerment programs to overcome barriers to seeking care for obstetric complications.

### Correspondence to:

Zaharaddeen Babandi,  
Department of community medicine,  
Ahmadu Bello University, Zaria, Nigeria  
Email: deenex1@yahoo.com

## INTRODUCTION

Although maternal mortality has declined by almost 50% since the 1990s, the rate of decline has been slow, as approximately 289,000

women die globally every year due to pregnancy complications.<sup>1</sup> Direct obstetric complications such as bleeding, hypertensive disorders of pregnancy, sepsis, complications

of abortions, ruptured uterus and ectopic pregnancy contribute TO nearly 70% of the deaths.<sup>2</sup> Commitments have been made by the international community to reduce the unacceptably high levels of maternal mortality and morbidity especially in developing countries but with little progress made so far.<sup>3</sup> The Persistence of high rates of maternal mortality in developing countries is striking, given that the knowledge and technology needed to dramatically reduce maternal mortality has been available for nearly a century, and the costs of interventions are relatively low.<sup>4</sup> The fact that developing countries are still far from achieving universal coverage for reproductive health services suggests that maternal mortality reduction is not given a priority.<sup>4</sup>

In sub-Saharan Africa, the danger of death during pregnancy or childbirth is 175 times higher when compared to developed nations of the world, and the risk for pregnancy-related illnesses and adverse consequences after child delivery is much higher.<sup>5</sup> Five hundred thousand deaths are recorded per year in the sub-Saharan African countries.<sup>5</sup> Nigeria accounts for 59,000 maternal deaths annually, which represents 19.5% of the global maternal mortality burden.<sup>6</sup> Nigeria is the largest contributor to maternal mortality in Africa and the second largest in the world after India.<sup>6,7</sup> But even within Nigeria, regional variations exist in maternal mortality, with the northern part of the country bearing a disproportionate burden.<sup>6</sup> Jigawa State in North-western Nigeria has a high maternal mortality ratio, underscoring the

urgent need for health systems improvement and interventions to accelerate reductions in maternal mortality ratio.<sup>8</sup> Estimates from 2017 revealed that Jigawa State has a maternal mortality ratio (MMR) of 1,012 per 100,000 live births with a total lifetime risk of maternal death of 1 in 15.<sup>8</sup> This high maternal mortality has been attributed to poor availability and utilization of emergency obstetric care services to handle complications of pregnancy and childbirth.<sup>9</sup> Findings from a national study in Nigeria on the availability, pattern and utilization of Emergency Obstetric and Newborn Care (EmONC) revealed that the proportion of deliveries that took place in facilities meeting Emergency Obstetric Care criteria was just 5.9%. This indicates an unmet need for EmONC as 15% of pregnant women are expected to have complications and should require EmONC services.<sup>9</sup>

To avert maternal deaths, it is pertinent that certain types of obstetric services be made available and used by mothers who need them. Recognizing this, more governments globally, are putting emergency obstetric care at the centre of their maternal health programs.<sup>10</sup> Stakeholders agree that good-quality EmONC should be universally available and accessible, that all women should deliver their infants in the presence of a professional, skilled birth attendant, and that these key services should be integrated into health systems.<sup>3</sup>

Understanding why women do not use these services is critical to developing interventions to address the high rate of maternal mortality in Jigawa State. Most of the existing studies on the

status of emergency obstetric care in Nigeria are purely quantitative in approach and therefore do not explore some contextual and psychosocial factors associated with service utilization. This study is therefore qualitative and aims to explore the issues surrounding the availability and utilization of BEmONC services in Jigawa State.

## METHODOLOGY

The study was conducted in 2022 in Jigawa State, a predominantly rural State in North-western Nigeria. With a 2022 projected population of 5,590,272. The State has an MMR of 1,012 per 100,000 live births with a total lifetime risk of maternal death of 1 in 15.8. About 49% of the population are females. The state has 120 Primary Healthcare Centers (PHC) that provide delivery services.

The study was a cross-sectional study with qualitative methods of data collection conducted among mothers of children under the age of 5 years. Mothers who were not permanent residents of the selected communities were excluded from the study.

Twelve focus group discussions (FGDs) were conducted, four in each of the three selected local government areas (Kazaure, Hadejia and Dutse LGAs) and two communities were selected per LGA via purposive sampling technique. Eight eligible participants were selected per FGD group, giving a total of 96 participants. The participants were purposively

selected based on individuals' willingness to participate and give their views. The FGD groups constituted homogenous groups of women divided as follows; women less than 35 years of age who had utilized BEmONC services, women less than 35 years of age who had not utilized BEmONC services, women aged 35 years and above who had utilized BEmONC services and women aged 35 years and above who had not utilized BEmONC services.

An FGD guide was adapted from the "field-friendly guide to integrate Emergency Obstetric Care in humanitarian programs".<sup>11</sup>

The FGD sessions were tape-recorded to enable proper and full documentation of each participant's contribution. Each of the discussions lasted for about one hour and was conducted in places that were convenient and provided privacy and confidentiality to the participants. The audio recordings and field notes were transcribed in the Hausa language and then translated into English language. Content analysis along thematic lines was done and the findings were reported in narrative form.

Ethical clearance was obtained from the Research Ethics Committee of Ahmadu Bello University Teaching Hospital Zaria (ABUTHZ/HREC/W23/2021). Verbal informed consent was obtained from each of the participants before the commencement of FGDs.

**Table 1: Socio-demographic characteristics of participants of the Focus Group Discussions**

Variable	Utilized BEmONC		Not Utilized BEmONC	
	n (%)		n (%)	
<b>Education</b>	<35 years	35 years and above	<35 years	35 years and above
No formal	4(16.6)	6(25.0)	7(29.2)	8(33.4)
Primary	8(33.3)	6(25.0)	10(41.7)	12(50.0)
Secondary	10(41.7)	8(33.4)	5(20.7)	4(16.6)
Tertiary	2(8.4)	4(16.6)	2(8.4)	-
<b>Employment status</b>				
Employed	8(33.3)	7(29.2)	4 (16.6)	6(25.0)
Unemployed	16(66.7)	17(70.8)	20 (83.4)	18(75.0)

## RESULTS

### Socio-demographic characteristics of participants

The mean age of the participants was  $31 \pm 6$  years. Most of the participants in all groups had primary education and most of them were unemployed.

The major themes that emerged from the FGD were the identification of obstetric complications and danger signs, decision-making concerning obtaining care for obstetric complications, utilization/obtaining care for obstetric complications, availability of services for obstetric care in local health facilities, and access to health facilities for care of obstetric complications.

### Identification of obstetric complications and danger signs

Most of the participants were able to identify obstetric danger signs. They mentioned danger

signs such as bleeding, blurring of vision, convulsions, labour lasting for a long time, malaria and abortions among others. Some of the participants said:

*“Plenty women have problems during childbirth like bleeding and long labour, it is a serious problem and can kill the mother if care is not taken” (FGD 3, >35 years, non-utilizer).*

*“Sometimes a woman may spend three days in labour without giving birth and the baby often dies. The baby suffers from the long labour and the woman gets exhausted and weak” (FGD 5, < 35 years, Utilizer).*

Many of the participants repeatedly mentioned the problem of body swelling and convulsions, some relating it to “bad blood”.

*“A common problem is that of body swelling, sometimes they tell us the blood pressure is high and the woman starts to convulse and even*

*becomes unconscious*" (**FGD 6, > 35 years, Utilizer**).

*"It is common to see women having severe headaches and blurry vision; I think it is because of the problem of bad blood"* (**FGD 7, > 35 years, non-utilizer**).

Most of the women opined that medical attention is needed only when the complications become serious. Some of the participants said:

*"When a woman begins to clench her teeth and convulsions start, we seek help in the hospital close to us"* (**FGD 3, > 35 years, non-utilizer**).

*"Sometimes when the bleeding refuses to stop or when the mother becomes very weak and white, we think the bleeding is very serious"* (**FGD 7, > 35 years, non-utilizer**).

#### **Decision-making concerning obtaining care for obstetric complications.**

Most participants in all the groups were unanimous in saying the decision-making on care-seeking lies on the husbands and occasionally the mothers-in-law and other husband's relatives.

*"Most times it's the husband that takes the decision, if he is not around, his mother will be contacted".* (**FGD 10, > 35 years, utilizer**).

*"We have to wait for our husbands to tell us what to do even if they are not around. We will wait for them to come back or call them on the phone. They have to decide"* (**FGD 9, < 35 years, utilizer**).

*"It's my mother-in-law. He will call her and seek her opinion before we decide what to do"* (**FGD 10, > 35 years, utilizer**).

Few of the participants argued that they occasionally decide for themselves on care seeking for obstetric complications. A participant said,

*"When problems occur, I decide for myself what to do and later inform my husband and relatives. Except if it is a serious emergency then anything can happen that I may not even know. My husband is a driver, so he is mostly not around. I take my decision"* (**FGD 1, < 35 years, utilizer**).

An unpopular opinion among the participants is decision-making by the neighbours. A participant said,

*"Sometimes even our neighbours will take the decision, especially when the husband is not around"* (**FGD 7, > 35 years, non-utilizer**)

Factors identified as major drivers of decision-making to obtain care for obstetric emergencies included money, past experience with care at the health facility, cultural beliefs and distance. Some of the participants said:

*"It's money that determines the decision. If money is available at that time, the husband is likely to decide we should seek care. If there is no money at that time, then it will be a different story entirely"* (**FGD 4, < 35 years non-utilizer**).

*"My husband is a real Fulani man; he doesn't believe in the hospital. It is a tradition in the*

*family that we deliver at home. Even if there is money, we will buy some traditional medicine”* (**FGD 10, > 35 years, utilizer**).

The distance of the health facility and the timing of the event were cited by many of the participants in all groups.

*“How far the hospital is and the time the problem occurs is very important. If the problem occurs in the night, then the husband will not want to decide on going to a hospital, especially if the hospital is far”* (**FGD 11, > 35 years, non-utilizer**).

### **Availability of services for obstetric care in the primary health care facility**

Discussions also centred on the availability of services for the management of obstetric complications at primary healthcare centres. The participants were unanimous in agreeing that the services required are most times not available in the PHCs as they are mostly referred to other facilities. Some of the participants said, “*If the delivery does not come with a problem, they will take care of you very well in the small hospital. The problem is they don’t have enough materials to take care of bleeding and convulsions*” (**FGD 6, > 35 years, utilizer**).

*“You people asked us to go the hospital if we have problems, but many times they do not have some of the necessary things to treat us. Gaskiya (honestly) they are trying their best, but the facilities are not enough.”* (**FGD 2, > 35 years, utilizer**).

The respondents identified prolonged/obstructed labour, convulsions, bleeding and retained placenta are some of the problems that could not be treated in the PHCs.

*“Whenever a woman is in labour and she is unable to deliver, they cannot do anything, they just send us to the general hospital.”* (**FGD 11, > 35 years, non-utilizer**).

*“I took my sister when she fell and started bleeding, she was 3 months pregnant, and they told us she needed wankin ciki (uterine evacuation) for which we had to go to a private hospital to get”* (**FGD 5, < 35 years, utilizer**).

When participants were asked how they viewed the healthcare workers in the health facilities with regards to communication, interpersonal relationships and service delivery, the participants agreed that the health workers were putting in their best, but they are many times too harsh to them.

*“They take good care of the patients, they have no problems, except that some of them are wicked and use to shout at us”* (**FGD 1, < 35 years, utilizers**).

*“Most people praised the staff in the small hospitals because they are good. The problem with them is that they are making us pay money after the government says services are free”* (**FGD 4, < 35 years, non-utilizers**).

### **Barriers to utilization of Emergency Obstetric Care services**

The participants were further asked about their opinion on the major hindrances for taking the

women to the hospital to seek care. Most of the participants in both groups identified major barriers to care seeking as lack of money, lack of transportation, distance to the nearest health facility and fear of embarrassment by the health care workers. The barriers can be classified as health system, community, and individual factors.

### **Health System factors**

The health system factors identified are cost of care, distance to health facility and quality of services including the attitude of healthcare workers.

#### 1. Distance and means of transportation.

On what participants thought about the distance of the nearest Basic Emergency Obstetric Care facility to their homes, there were varying opinions in both groups. A slight majority were however of the opinion that the health facilities were very far from them. A participant opined. “*Transport is a major concern, especially at night. It is not good to put a woman in labour on a motorcycle. In the night, the cars are not available for transport*” (**FGD 7, > 35 years, non-utilizer**).

“*We do not have a hospital in our locality, it is too far. We spend at least 200 naira on motorcycle to go the nearest health facility for delivery*” (**FGD 7, > 35 years, non-utilizer**).

“*I stay far from the hospital; sometimes we will trek even in the night to the hospital because there was no transport. Please, if possible, we too want a hospital that can take delivery close to us*” (**FGD 4, < 35 years, non-utilizer**).

“*You see; they tell us to deliver in the hospital but the hospital in my locality does not take delivery. Before the government provided a keke (tricycle) to take us to the hospital when we want to deliver or when we are sick with pregnancy, but now it is no longer available. What can we do now? The hospital is far*” (**FGD 8, < 35 years, non-utilizer**).

Some of the participants acknowledged that they have health facilities very close by. A participant said, “*They see us as villagers, but we have everything around us. The health facility is a walking distance to my house. We even have another one not too far in the neighbouring ward*” (**FGD 10, > 35 years, and utilizer**)

Most of the participants in both groups agreed that distance is a very important factor in the utilization of Basic Emergency Obstetric Care services. “*If the hospital is too far, it is hard for us because even money for transport is a problem. They should bring doctors and equipment to our local hospital, it will help*” (**FGD 3, > 35 years, non-utilizer**).

“*If problem starts in the night, how do you expect us to go to a hospital that is far.*” (**FGD 4, < 35 years, non-utilizer**).

#### 2. Cost of Care

When participants were asked about the cost involved in seeking care in the health facilities, most of them admitted that some services were free at the primary health centres, but still, they cannot afford the cost of the other things they have to pay for.

*“Honestly we spend a lot of money. The government say the services are free, but they still charge exorbitant fees” (FGD 2, > 35 years, utilizer).*

*“Many of us have to borrow money or sell something to pay the money for the hospital. It is free to get a card but the other services and medicines are expensive” (FGD 11, > 35 years, non-utilizer).*

*“The government should do something about the cost of services in the small hospitals. Sometimes it is even cheaper to go to the general hospital” (FGD 12, < 35 years, non-utilizer).*

*“In my two deliveries I paid for everything including hand gloves. The money is too much. The cost there is even more than the general hospital where they can give you some things free.” (FGD 9, < 35 years, utilizer).*

*“The medicines they ask us to buy are very expensive. The ones they give free are the very cheap ones” (FGD 7, > 35 years, non-utilizer).*

A similar opinion said,

*“Since they say services are free, but we end up spending our money. Anything more than three hundred and fifty naira (350 naira) we must pay from our pockets.” (FGD 9, < 35 years, utilizer).*

*“Gaskiya (Honestly), the problem we face is that we cannot afford the money, even though they announce that services are free, we pay for many things and we cannot afford” (FGD 3, > 35 years, non-utilizer).*

### 3. Quality of Care

Ill-treatment/disrespectful treatment by some healthcare workers in the hospitals also came out prominent in the discussion. A participant said, *“Sometimes even the healthcare workers will not listen to you in the hospital. Some of the healthcare workers will not even attend to you until the baby comes out. They let us to suffer alone” (FGD 2, > 35 years, utilizer).*

*“The attitude of the nurses is bad, sometimes they shout at us and even our relatives” (FGD 7, > 35 years, non-utilizer).*

*“Some of us don’t want embarrassment” (FGD 9, < 35 years, utilizer).*

Other health facility-related factors identified as barriers to utilization of the services were lack of some equipment and services, lack of doctors, frequent referral, and fee payment for services. Some participants said, *“The care in the general hospital is better, they identify the problem before labour, but it’s not the case with the small hospitals. In the general hospital, they can even tell you where the head is without scanning, they have more equipment unlike the small hospitals” (FGD 7, > 35 years, non-utilizer).*

*“Sometimes it’s better we go to the big hospital straight because the small hospitals will still refer us to big ones when we go there” (FGD 9, < 35 years, utilizers).*

*“They do not have doctors in the small hospitals, only nurses and volunteer staff. Please help us tell the government to send doctors to the small hospitals around us so we*

*do not have to walk long distance to the general hospitals. Please” (FGD 10, > 35 years, utilizer).*

### **Community and Individual factors**

Some of the participants cited insecurity as a reason why they did not seek care from the hospital, especially at night. A participant said,

*“There is a big problem with insecurity; in the night, it is not safe to come out, especially for us staying at the Bayan Gari (outskirts of the town). Even the motorcycle riders are afraid of coming to our side” (FGD 4, < 35 years, non-utilizer).*

The participants from the group of non-utilizers also pointed out that for some of them; delivery of the first child at home is a thing of pride. A participant said, *“For my first child I didn’t go to the hospital for anything, I had small fever and headache, but I had to stay at home to get cured. Your in-laws will look at you as weak if you deliver your first child in the hospital. Even though some of them are changing because of what you people have been saying on the radio (FGD 11, > 35 years, non-utilizer)”*

Some of the participants suggested that some preliminary help be sought at home before hospital intervention.

*“Before the arrival of her husband, they can call a healthcare worker or an Ugozoma (Traditional birth attendant) to help with the problem, if not possible, then she may be taken to a hospital” (FGD 5, < 35 years, utilizer).*

*“When problems arise, it is better to seek help from a health care worker that stays around us or a chemist’s owner” (FGD 6, > 35 years, utilizer).*

Some of the participants were of the opinion that hospital intervention for such emergencies is not necessary.

*“Sometimes these things are destined to happen, nobody can help you but God, so we just pray and do what we have to do at home. Sometimes we just go to the hospital so that you people will not complain” (FGD 12, < 35 years, non-utilizer).*

*“I have never gone to the hospital for any problem, even antenatal care I do not go, talk less of problems. God has helped me in all my three deliveries” (FGD 8, < 35 years, non-utilizer).*

### **DISCUSSION**

The study explored the availability and barriers to utilization of Basic Emergency Obstetric Care services among mothers of children under the age of five years in Jigawa State.

Most of the participants were able to identify obstetric danger signs. They mentioned danger signs like bleeding, blurring of vision, convulsions, and fever among others. Even though identification of obstetric danger signs does not necessarily translate to utilization of emergency obstetric care services, it is usually the first step towards efforts to utilize the emergency obstetric care services. Women who do not know obstetric danger signs will not

know when to seek care even when they are willing to do so.

The implication of good knowledge of these danger signs is that pregnant women will be more likely to make conscious effort to seek care when they sense danger. Similarly, a study from Nigeria also reported that the majority of the women can identify obstetric danger signs.<sup>12</sup> On the contrary, studies carried out in Northern<sup>13</sup> and another study from Ethiopia<sup>14</sup> reported a low level of identification of obstetric danger signs.

Even though most of the participants in this study identified obstetric complications, the majority of them opined that medical attention is needed only when the complications become serious. Most of the women will opt to first seek care at home even when they see the danger signs. This is likely due to low-risk perception among the women and may portend a setback for the utilization of maternal health services, especially emergency obstetric care. Another study from Northern Nigeria also reported a low-risk perception of obstetric complications among women.<sup>12</sup>

Participants in all groups were unanimous in saying the decision-making on care seeking for obstetric complications lies on the husbands and occasionally on the mothers-in-law or other relatives of the husband. Societies in Northern Nigeria are predominantly patriarchal; hence it is a common occurrence for decision-making to be done by the husband or his family members. The consequence is that women do not have enough power to participate in the decision-

making concerning their health and therefore may not be able to utilize health services, even when they are willing to do so. Studies have also shown that the occurrence of obstetric complications correlates strongly with decision-making powers, as women with decision-making powers were found to be significantly less likely to encounter obstetric complications.<sup>15</sup>

The participants identified factors that influenced the decisions to seek care for obstetric complications including cost of care, quality of care, cultural beliefs and geographical access to the healthcare facility. Cost of care is a significant determinant of utilization of health services, particularly in Nigeria, where out-of-pocket payment accounts for over 80% of healthcare expenditure.<sup>16</sup> Even though the Jigawa State Government had a scheme of free maternal and child health services, other costs associated with transportation, certain consumables and some categories of drugs were mostly borne by the patients. Those payments represent a significant financial burden on the patients and their families, given the myriad of socioeconomic challenges affecting the residents of the state.

Quality issues identified as hindrances to care seeking by the participants included ill-treatment and disrespectful treatment by some healthcare workers, lack of certain equipment and services, lack of doctors in the healthcare facilities, and frequent referrals to higher centers for what the participants perceived as “minor” problems. The implication of this poor-quality perception by the participants is

that efforts and interventions aimed toward demand generation for maternal health services will not yield the desired effect if the women are not satisfied with the services, they receive in the health facilities. This, alongside the problem of cost of care, will pose significant challenges to the demand generation efforts. Certain cultural barriers were also identified by the participants. For some of them, delivery of the first child at home is a thing of pride. This was a typical perception in Fulani settlements, where women are seen as lazy if they opt to deliver in a healthcare facility, particularly during the first delivery.

Participants were unanimous in agreeing that the services required are most times not available in the PHCs, as they are mostly referred to other facilities even for minor problems. Many of the health facilities do not run 24-hour services. Moreover, equipment and facilities were mostly not available, necessitating undue referrals for care. A study conducted in six developing countries found that Basic EmONC services are consistently not available in sufficient numbers.<sup>17</sup> The lack of service availability in the facilities indicates a significant unrealized potential in the provision of BEmONC services in Jigawa State. This is despite a recent drive by the state government to provide at least a functional Primary Health Care facility in every ward. This therefore means that the women do not get a full complement of BEmONC services with

consequent negative effects on maternal health outcomes.

### **Limitations**

Due to the qualitative nature of the study, its conclusions cannot be generalized to the entire population. The problem of information bias could not be eliminated as some participants may not be willing to provide correct information especially when discussing in a group setting. However, this was minimized by segregating the participants based on their age and status of utilization of BEmONC services.

### **CONCLUSION**

The study found that the majority of the participants were knowledgeable of obstetric danger signs but had low-risk perceptions toward obstetric complications. Barriers to seeking care for obstetric complications identified were lack of power for decision-making to seek care, cost of seeking care, cultural beliefs, poor quality of services, unavailability of service and distance to health facilities. The Jigawa State Government should strengthen its women empowerment programs to improve the socio-economic status and decision-making powers of women in the state and also intensify health education campaigns on the importance of utilizing healthcare services for obstetric complications. The State Government should also improve the availability and quality of Basic Emergency Obstetric Care services in the health facilities.

## REFERENCES

1. World Health organization Maternal Mortality Fact Sheets [Internet]. WHO Geneva; 2019. Available from: [/www.who.int/news-room/fact-sheets/detail/maternal-mortality](http://www.who.int/news-room/fact-sheets/detail/maternal-mortality)
2. Bauserman M, Lokangaka A, Thorsten V, Tshefu A, Goudar SS, Esamai F, et al. Risk factors For Maternal Death and Trends in Maternal Mortality in Low- and Middle-Income Countries: A Prospective Longitudinal Cohort Analysis. *Reprod Health.* 2015;12(2):5–15. <https://doi.org/10.1186/1742-4755-12-s2-s5>
3. World Health Organization, UNICEF. Monitoring Emergency Obstetric Care: A Handbook. Geneva, Switzerland; 2009. Available from:  
<https://www.who.int/publications/i/item/9789241547734>
4. Bhalotra S, Clarke D, Gomes J, Venkataramani A. World Institute for Development Economic Research (WIDER) Working Paper 2018/58 - Maternal mortality and women's political participation. 2018. Available from: <https://ideas.repec.org/p/unu/wpaper/wp2018-58.html>
5. Olonade O, Olawande TI, Alabi OJ, Imhonopi D. Maternal Mortality and Maternal Health Care in Nigeria: Implications for Socio-Economic Development. *Open Access Maced J Med Sci.* 2019;7(5):849–55. <https://doi.org/10.3889/oamjms.2019.041>
6. African Population and Health Research Center. Maternal-Health-in-Nigeria-Facts-and-Figures. 2017. <https://aphrc.org/publication/maternal-health-in-nigeria-facts-and-figures/>
7. Garenne M. Maternal mortality in Africa: Investigating More, Acting More. *The Lancet Global Health.* 2015;3(1). 346-347. [https://doi.org/10.1016/S2214-109X\(15\)00027-3](https://doi.org/10.1016/S2214-109X(15)00027-3)
8. Sharma V, Brown W, Kainuwa MA, Leight J, Nyqvist MB. High maternal mortality in Jigawa State, Northern Nigeria Estimated Using the Sisterhood Method. *BMC Pregnancy Childbirth.* 2017;17(1):1–6. <https://doi.org/10.1186/s12884-017-1341-5>
9. Bamgbose EA, Adebiyi AO, Fatiregun AA. Assessment of Emergency Obstetric Care Services in Ibadan-Ibarapa Health Zone, Oyo state, Nigeria. *Afr J Reprod Health.* 2016;20(1):88–97. <https://doi.org/10.29063/ajrh2016/v20i1.9>
10. Paxton A, Officer SP, Maine D, Hijab N. AMDD Workbook using the UN Process Indicators of Emergency Obstetric Services. 2003. <https://www.pubichealth.columbia.edu/file/10733/download?token=qsMrGZRA>
11. Women's Commission for Refugee Women and Children. Field-friendly Guide to Integrate Emergency Obstetric Care in Humanitarian Programs. 2005. Available from;

[https://www.rhrc.org/resources/emoc/EmOC\\_ffg.pdf](https://www.rhrc.org/resources/emoc/EmOC_ffg.pdf).

12. Iliyasu Z, Galadanci HS, Abdurrahim A, Jibo A, Salihu HM, Aliyu MH. Correlates of Obstetric Risk Perception and Recognition of Danger Signs in Kano, Northern Nigeria. *Ann Glob Heal [Internet]*. 2019;3(1):85-88. <https://doi.org/10.5334/aogh.376>

13. Oguntunde O, Nyenwa J, Yusuf F, Dauda DS, Salihu A, Sinai I. Factors Associated with the Knowledge of Obstetric Danger Signs, and Perceptions of the Need for Obstetric Care amongst Married Young Women in Northern Nigeria. *African J Prim Heal Care Fam Med*. 2021;13(1):26-29.

<https://doi.org/10.4102/phcfm.v13i1.2557>

14. Bililign N, Mulatu T. Knowledge of Obstetric Danger Signs and Associated Factors Among Reproductive Age Women in Raya Kobo District of Ethiopia: A Community Based Cross-Sectional Study. *BMC Pregnancy Childbirth*. 2017;17(1):70. <https://doi.org/10.1186/s12884-017-1253-4>

15. Abubakar R, Yohanna S, Zubairu H. Influence of Health Decision Making on Maternal Complications among Women Delivered at a General Hospital, North-Western Nigeria. *Niger J Clin Pract*. 2020;23(5):675. [https://doi.org/10.4103/njcp.njcp\\_659\\_18](https://doi.org/10.4103/njcp.njcp_659_18).

16. Hafez R. Nigeria Health Financing System Assessment. Washington DC; World Bank 2018. Available

at: <https://library.au.int/nigeria-health-financing-system-assessment>

17. Ameh C, Msuya S, Hofman J, Raven J, Mathai M, Broek N Van Den. Status of Emergency Obstetric Care in Six Developing Countries Five Years before the MDG Targets for Maternal and Newborn Health. *PLoS One*. 2012;7(12):9–15.

<https://doi.org/10.1371/journal.pone.0049938>