Research Article

Maternal mortality and factors affecting it, among pregnant women in Abeokuta South, Nigeria

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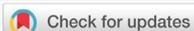
Abstract

This observational study assessed the knowledge of pregnant women attending antenatal clinics at two selected hospitals in Abeokuta South, Nigeria on the causes and risk factors of maternal mortality, identified barriers to knowledge acquisition, and examined the influence of parity of respondents on their knowledge of factors causing maternal mortality. Maternal mortality is extremely high in Nigeria, it is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Descriptive research design was used in this study and qualitative data from 136 respondents selected randomly, were obtained through a self-designed questionnaire that comprised three sections. Data were analyzed and indicated that parity of the pregnant women do not have an influence on their knowledge of factors responsible for maternal mortality. Findings revealed that majority (67.6%) of the respondents had high knowledge on the causes of maternal mortality – haemorrhage, sepsis, prolonged/obstructed labour, anaemia, unsafe abortion, infection, hypertensive disorders, care rendered by unskilled medical practitioners and its risk factors - parity, poverty, place of last delivery and low attendance at antenatal clinic. Educational background, marital status, irregular antenatal visits, socio-cultural practices and occupational status were identified as barriers to knowledge acquisition. This paper concluded that pregnant women may have a high knowledge about the factors responsible for maternal mortality. This is probably due to the fact that all respondents had formal education and because they were interviewed on antenatal clinic days, which suggests that they might have heard about the causes and risk factors for maternal mortality during their visits. Authors recommended that government should employ qualified health professionals and provide medical subsidy, it is hoped that this will ensure that pregnant women get quality care throughout the period of pregnancy and delivery.

Introduction

"Maternal mortality remains unacceptably high in Nigeria, ranking among the highest in the world and the rate of reducing these deaths have been slow as many of the contributory factors remain unaddressed" [1]. Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth; 99% of these deaths, however, occur in developing countries [2]. Nigeria is the second largest contributor to maternal mortality worldwide, after India [3]. Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes [4]. In Nigeria, the five leading causes of maternal death include obstetric haemorrhage, eclampsia, sepsis, obstructed labour and complications of unsafe abortion [5-7].

Maternal mortality during pregnancy is attributed to mental health conditions [8]. Risk of maternal mortality is increased in women who have had two children and above [9]. The higher the number of antenatal visits, the lower the likelihood of maternal

mortality [10,11]. Azuh, Azuh, Iweala, Adeloye, Akanbi & Mordi [12] reported that place of delivery of last birth is significant to maternal mortality. Maternal mortality is a symptom of poverty [13,14]. Cardiovascular disease emerges as an important contributor to maternal mortality in both developing countries and the developed world [15,16]. Evance, Godfrey, Honorati & Kathleen [17] reported that married women had a mortality protective effect of 62% over unmarried ones.

One of the targets of the third sustainable development goal is to reduce the global maternal mortality ratio to less than 70 per 100,000 live births [18], achieving this can be done through measures such as noting the percentage of births attended by skilled health personnel trained to give the necessary supervision, care and advice to women during pregnancy, labour, and the postpartum period; to conduct deliveries on their own; and to care for new-borns [19]. However, this is one of the risk factors for maternal mortality.

As maternal mortality is a global public health issue [20], understanding its causes and correlates is crucial in confronting the challenge of unyielding high rates in Sub-Saharan Africa [21]. In this study, we assessed the knowledge of pregnant women on the causes and risk factors for maternal mortality, identified the barriers that could prevent pregnant women from acquiring knowledge about maternal mortality, and examined whether or not there is a relationship between parity of respondents and their level of knowledge on causes and risk factors for maternal mortality.

Materials and Methods

Descriptive research design was used to conduct this study. Study population were pregnant women in Abeokuta South Local Government. Abeokuta South Local Government is the Premier Local Government in Nigeria, located in Ake, Abeokuta- the capital of Ogun State. With an area of $71km^2$, density of $4,904/km^2$ and estimated total population of 250, 278, it houses the first church in Nigeria. It is bounded to the north and west by Abeokuta North Local Government Area, to the east by Odeda Local Government area, and to the south by Obafemi Owode Local Government Area. Target population were pregnant women attending antenatal clinic at two prominent hospitals in Abeokuta South Local Government - Federal Medical Centre, Idi-aba Abeokuta and State Hospital Ijaye, Abeokuta. Yamane's formula was used (because population is finite and we desire a 95% confidence interval and 5% precision level) to determine the sample size of one hundred and thirty-six respondents, who were selected through simple random sampling from a total population of 325; 105 from Federal Medical Centre and 220 from State Hospital Abeokuta. Pregnant women with no formal education were excluded from the study as the items on the questionnaire were written in English language. Respondents were accessed on antenatal clinic days at the study settings which are Mondays to Thursdays and Wednesdays respectively. Qualitative data were collected through a self-structured questionnaire which consisted of three sections. The questionnaire was tested using Test-retest reliability and a test-retest correlation of 0.85 was obtained which indicated item reliability (test-retest correlation score of >0.7 to 1 is acceptable). Section one comprised the sociodemographic characteristics of interest, section two examined the knowledge of respondents on factors causing maternal mortality while section three addressed possible barriers to knowledge acquisition on factors causing maternal mortality. Ethical considerations were strictly adhered to. Permission was sought and obtained from the research committee of both research settings. Participants were educated on the purpose of the research and the items on the questionnaire after which they were asked whether they would love to participate in the study or not. All participants signified willingness to participate and consent was obtained from them. The administered questionnaires were all retrieved. Data were analyzed through Statistical Package for Social Sciences (SPSS) version 20 using Pearson's chi-square, frequency counting and percentage of variables. Null and alternative hypothesis formulated were:

H_0 (null hypothesis): There will be no significant relationship between the parity of respondents and their knowledge on causes of maternal mortality

H_1 (alternative hypothesis): There will be significant relationship between the parity of respondents and their knowledge on causes of maternal mortality

Decision rule: Accept null hypothesis and reject the alternative hypothesis when the Pearson value (p-value) is greater than the α value of 0.05. Accept the alternative hypothesis and reject the null hypothesis when the Pearson value is lesser than the α value.

Results and Discussion

Sociodemographic data gives insight to the characteristics of the respondents. Nullipara implies that the woman has never given birth to a child. Primipara implies that the woman has given birth to only one child while multipara implies that the woman has given birth to two or more children. FLSC is an acronym for First School Leaving Certificate (awarded after 5 years of primary education) while SSCE is an acronym for Senior School Leaving Certificate (awarded after 6 years of secondary education) (Table 1).

Causes of maternal mortality

We assessed the knowledge of respondents on the causes of maternal mortality using a binary method; Yes/No (Table 2).

Haemorrhage was identified as the major cause of maternal mortality. This finding agrees with that of Haeri & Dildy [22], that haemorrhage was one of the top three obstetrics related causes of maternal mortality. A large proportion of respondents also opined that sepsis is a cause of maternal mortality. This correlates with the findings of

Table 1: Sociodemographic characteristics of Respondents.

VARIABLES	FREQUENCY	PERCENTAGE (%)
Age		
12-30 years	63	46.3
31-40 years	62	45.6
41-55 years	11	8.1
Total	136	100.0
Religion		
Christianity	90	66.2
Islam	42	30.9
Others	4	2.9
Total	136	100.0
Parity		
Nullipara	6	4.4
Multipara	85	62.5
Primipara	45	33.1
Total	136	100.0
Educational attainment		
F.S.L.C/ S.S.C.E	36	26.5
O.N.D.	28	20.6
H.N.D	30	22.1
B.Sc	27	19.9
M.Sc and above	15	11.0
Total	136	100.0
Occupational status		
Trader	53	39.0
Civil servants/Skilled professional	46	33.8
Artisans	20	14.7
Housewives	7	5.1
Unemployed	10	7.4
Total	136	100.0

Table 2: Causes of maternal mortality.

VARIABLES	YES	NO
Haemorrhage	133 97.8%	3 2.2%
Sepsis	123 90.45%	13 9.6%
Prolonged/Obstructed labour	131 96.3%	5 3.7%
Anaemia	128 94.1%	8 5.9%
Unsafe abortion	130 95.6%	6 4.4%
Infection	117 86%	19 14%
Hypertensive disorder	120 88.2%	16 11.8%
Care rendered by an unskilled health practitioner	131 96.3%	5 3.7%

Oye-Adeniran et al. [23], that sepsis can cause maternal mortality during pregnancy, childbirth and postpartum period. The findings of Dolea & AbouZahr (2003) and Neilson, Lavender, Quenby & Wray [24] that neglected obstructed labour is a major cause of maternal mortality agrees with the findings of this study. Anaemia plays a pernicious role in maternal mortality [25-30], this finding agrees with the findings from this study.

Unsafe abortion is one of the leading causes of maternal mortality [31-33]. This agrees with the findings of this study. Majority of the pregnant women believed that infection can cause maternal death. This agrees with the findings of Halder, Vijayselvi & Jose [34]. Hypertensive disorders of pregnancy are one of the most common direct causes of maternal mortality [35-39]. This finding agrees with the findings of this study. A large proportion of respondents also opined that care rendered by an unskilled health practitioner causes maternal mortality, Adams [40] agreed to this finding by reporting that unprofessional practices by quack birth attendants is a major contributory factor to maternal mortality in Lagos [40] (Table 3).

Lack of antenatal visit was identified as the predominant risk factor for maternal mortality. This may be attributed to the socio-cultural beliefs of participants, as pregnant women in Abeokuta would rather consult religious leaders or traditional healers for information about their health. This agrees with the findings of Nafiu, Kabir & Adiukwu, 2016; Ntoimo et al. [10,11]. Respondents also agreed that grief and depression could lead to maternal mortality. This agrees with the findings of Oates [8], and Sumankuuro, Crockett &Wang [41]. Parity was identified as a risk factor, and this agrees with the report of Bauserman et al. [9]. In addition, the pregnant women agreed that place of last delivery could make a woman susceptible to maternal mortality. This finding is congruent with that of Azuh, Azuh, Iweala, Adeloye, Akanbi & Mordi [12]. Many participants opined that poverty is linked to maternal mortality. This agrees with findings of Ujah, Aisien, Mutihir, Vanderjagt, Glew & Uguru [13] and Lanre-Abass [14]. Overall, respondents believed that marital status is also a risk factor for maternal mortality. Evance, Godfrey, Honorati & Kathleen [17] supported this finding (Table 4).

High knowledge implies that respondents can give sufficient information about the causes and risk factors for maternal mortality while low knowledge implies that respondents can give only a little or no information at all about the causes and risk factors for maternal mortality.

From the table above, majority (67.6%) of respondents had high knowledge about the causes and risk factors for maternal mortality. This could be attributed to formal education, being the study inclusion criteria and also due to the nature of the study setting- both research settings have formally trained and certified health care professionals who could give correct information about maternal mortality.

Table 3: Risk factors for maternal mortality.

VARIABLES	ACCURATE	INACCURATE
Grief and depression	107 78.7%	29 21.35%
Parity	107 78.7%	29 21.3%
Lack of antenatal visit	124 91.2%	12 8.8%
Place of last delivery	98 72.1%	38 27.9%
Poverty	96 70.6%	40 29.4%
Ailment or underlying disease	80 58.8%	56 41.2%
Emotional instability	96 70.6%	40 29.4%
Marital Status	97 71.3%	39 28.7%

Table 4: Summary of Knowledge.

Level of Knowledge	Frequency	Percentages
Low	44	32.4%
High	92	67.6%
TOTAL	136	100

Barriers to knowledge acquisition on maternal mortality

We assessed the knowledge of respondents on the barriers that may prevent a pregnant woman from acquiring knowledge about maternal mortality. The table below shows their responses (Table 5).

Most of the respondents identified educational background, irregular antenatal visits, socio-cultural practices, occupational status, misconception about pregnancy and labour, antenatal clinic requirements, patronization of unskilled health providers and inadequate information at antenatal visits as barriers to obtaining information about the causes of maternal mortality. A high proportion of respondents said that socio-cultural practices can prevent a woman from acquiring knowledge about maternal mortality. Participants may have agreed on this because Abeokuta South is peculiar for upholding traditional beliefs which is believed to emanate from the culture of the town. This finding agrees with that of Armenakis & Kiefer [42], that social and cultural factors inevitably interact with biology to impact health. In addition, majority of private owned health facilities in Abeokuta South employ quacks who give no or false information about maternal mortality to pregnant women during antenatal visits. Some participants would have had contact with such quacks during previous birth experiences.

Influence of parity of respondents on their knowledge of factors causing maternal mortality

We predicted that parity of respondents may have an influence on their knowledge about causes of maternal mortality. This hypothesis emanated from the premise that women with multiple children would have made more antenatal visits and probably have heard about maternal mortality unlike first time mothers. However, the analysis below indicated no relationship between the age and parity of respondents and their knowledge about maternal mortality (Table 6).

Decision rule: Accept null hypothesis and reject the alternative hypothesis when the Pearson value (p-value) is greater than the α value of 0.05. Accept the alternative hypothesis and reject the null hypothesis when the Pearson value is lesser than the α value.

The hypothesis testing above shows a higher p-value therefore we conclude that

Table 5: Barriers to knowledge acquisition on factors causing maternal mortality.

VARIABLE	ACCURATE	INACCURATE
Educational Background	124 91.2%	12 8.8%
Irregular antenatal visits	120 88.2%	16 11.8%
Socio-cultural practices	109 80.1%	27 19.9%
Occupational status	96 70.6%	40 29.4%
Misconceptions about pregnancy and labour	119 87.5%	17 12.5%
Antenatal clinic requirements	101 74.3%	35 25.7%
Patronization of unskilled health providers	116 85.3%	20 14.7%
Inadequate information at antenatal visits	124 91.25%	12 8.8%

Table 6: Relationship between parity and knowledge of respondents on causes of maternal mortality.

Parity * knowledge Crosstabulation					
Count					
		Knowledge			P-Value
		High	Low	Total	2	
Parity	Nullipara	2	4	6	7.514	0.276
	Multipara	31	54	85		
	Primipara	14	31	45		
Total		47	89	136		

there is no relationship between the parity of respondents and their knowledge on causes of maternal mortality. In order words, the knowledge of pregnant women about maternal mortality is not in any way affected by the number of children they have. This is perhaps as a result of technological advancement in Abeokuta South. A large proportion of Abeokuta South residents are educated with access to internet connected mobile phones which could be used to obtain information about maternal mortality irrespective of their parity. Our finding is in disagreement with the findings of Ensor, Quigley, Green, Badru, Kaluba & Siziya [43], that antenatal care visits (determined by parity) may have a role in improving obstetric knowledge.

Conclusion

We assessed the knowledge of pregnant women attending antenatal clinics at Federal Medical Centre Abeokuta and State Hospital Abeokuta, respectively. A hundred and thirty-six participants with formal education were selected randomly to participate in the study which sought to answer three research questions. The researchers concluded that participants may have a high knowledge on the causes and risk factors of maternal mortality, there are barriers preventing pregnant women from acquiring knowledge about maternal mortality and that parity of participants does not have an influence on their knowledge of causes of maternal mortality. This could be due to formal education, being the study inclusion criteria.

The study was conducted in two research setting. Therefore, caution should be exercised when generalizing the findings to a larger study population especially in the future because the participants were interviewed at a period (when pregnant). Our dataset did not capture all the risk factors for maternal mortality such as domestic violence and maltreatment, access to healthcare facilities. All participants gave informed consent to participate in the study, implying that they were all interested in testing their knowledge about causes of maternal mortality. Based on the findings, we recommend that Federal Ministry of Health collates a list of registered and licensed health care facilities and distribute accordingly, to ensure that women get medical treatment from the right sources. In addition, women should be educated on the

importance of antenatal visits so that they can have more regular attendance and get informed about safety measures to take during pregnancy and delivery, thus will prevent complications and hence reduce maternal mortality. Overall, government should employ qualified health professionals and provide medical subsidy, this will ensure that pregnant women get quality care throughout the period of pregnancy and delivery.

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