Effect of Socio-demographic Status, Knowledge, and Attitude on Utilisation of Safe Delivery Practices among Mothers of Children attending Child Welfare Clinics in Osogbo, Nigeria

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Abstract

Background: *Previous studies on attendance at delivery by skilled personnel have neglected childbearing women's knowledge and attitude towards safe delivery practices. This study assessed factors influencing utilisation of safe delivery services among mothers of under-five children attending child welfare clinics in Osogbo.*

Methods: *This was a cross-sectional study conducted at child welfare clinics in Osogbo, Nigeria. Respondents were selected using a multistage sampling technique. Data was collected using a semi-structured, interviewer-administered questionnaire and analysed using Statistical Package for Social Sciences version 23. Statistical association between safe delivery practices and socio-demographic factors, knowledge of and attitude towards safe delivery practices were determined using logistic regression and p-value <0.05 was considered statistically significant.*

Results: *Four hundred out of the 420 eligible respondents completed the questionnaire giving a response rate of 95.2%. More than half of the respondents; 223 (55.8%) were < 30 years old. Many respondents; 193 (48.3%) and their spouses; 229 (57.2%) had attained tertiary education. Almost all respondents; 389 (97.3%) attended antenatal care during their last pregnancies. Utilisation of skilled birth attendants was associated with antenatal clinic attendance in last pregnancy (p<0.001).*

Conclusion: *The factors associated with utilisation of safe delivery services were respondent's ages, educational attainment of the respondents and their spouses, and respondents' attendance at antenatal clinic in last pregnancy. Implementation research on measures to promote antenatal and delivery services by skilled birth attendants is needed in order to increase utilisation of safe delivery practices by mothers.*

Keywords: *Child welfare; Determinants; Safe delivery; Skilled birth attendants*

Introduction

Women and newborns may sometimes be at very high risk of dying during and shortly after childbirth.[1] Hence, skilled care at birth is essential for reducing maternal mortality and morbidity.[2-5] In 2017, about 15 countries were classified as high-alert due to high maternal mortality rates, which ranged from 31/100,000 in Syria to 1,150/100,000 women in South Sudan.[6] Given these alarming rates, it is understandable that institutional delivery is the second element for detecting labour and childbirth risks, during which interventions can be delivered by qualified medical personnel in health facilities.[7] It was reported in the year 2000 that 147 heads of state and governments agreed that childbirths assisted by trained birth attendants would be one of the key indicators to measure the progress of improving maternal health.[8] In addition, antenatal care (ANC) was considered a key entry point for pregnant women to receive a broad range of health promotion and disease prevention services.[9,10] This provides an opportunity for the management of existing and potential causes of maternal and newborn mortality and morbidity.[11]

Despite the benefits of ANC and available healthcare interventions to improve child and maternal health, many deliveries in low- and middle-income countries still occur at home in the absence of skilled birth attendants.[12-15] In Nigeria, according to the 2018 National Demographic and Health Survey (NDHS), only 39.4% of deliveries occurred in health facilities, out of which 37.5% were conducted by a skilled provider.[16] Evidence suggests that the low rate of delivery in healthcare facilities compared with delivery at home is the result of women's decisions.[17-19] Therefore, it is not surprising that, globally, around four million newborns die

each year in the first week of life,[20] while an estimated 529,000 mothers die due to pregnancy-related causes.[21] Globally, the latest statistics reveal that a pregnant woman or newborn dies every 11 seconds, mainly due to preventable causes.[1] In Nigeria, the perinatal mortality rate is estimated at 45 per 1,000 births.[16] It has been shown that availability of skilled attendants during labour and in the early postpartum period, can prevent up to 75% or more of maternal deaths.[22,23]

Safe delivery essentially entails hospital delivery managed by skilled birth attendants (SBAs). Safe delivery can significantly reduce suffering and health risks faced by women because they would be attended to by trained medical personnel with adequate knowledge of postpartum care. Factors that have been found to influence a woman's decision to deliver at a health facility or not include the cost of hospital services, the distance of health facility from home, husband's choice, tradition, hospital delivery by male birth attendants, and frequent vaginal examinations.[15,24-27]

In identifying factors related to hospital delivery and safe practices, previous studies have focused on the reproductive history and socio-economic characteristics of women at ante- and postnatal clinics at the community level. Knowledge of mothers about danger signs and attitude towards safe delivery practices have received less attention. Also, there is a need to determine the level of knowledge on safe delivery options among women of childbearing age who seek immunisation services for their children at children welfare clinics. This study, therefore, assessed the utilisation of safe delivery care and its determining factors among women attending child welfare clinics in Osogbo, Osun State.

Methods

Study Area

The study was carried out in Osogbo metropolis. Osogbo is the capital city of Osun State, with a population of about 324,156 people, based on the 2006 census,[28] and a projection of 730,642 by 2021.[29] There are three Local Government Areas (LGAs) in Osogbo (Olorunda, Osogbo, and Egbedore LGAs). According to the National Literacy Survey of 2010, the female literacy rate is 48.1% in Egbedore LGA, 54.3% in Olorunda LGA, and 69.5% in Osogbo LGA.[30] There are 103 healthcare facilities in Osogbo, of which over 70% are government-owned Primary Health Care (PHC) facilities, eleven are secondary, and one is a tertiary healthcare facility.[31]

Study design, population and sampling

This was a cross-sectional descriptive study. The study population included mothers of under 5 children who were attending infant welfare clinics in the public hospitals in Osogbo metropolis. The sample size was calculated using Leslie Fisher's formula for cross-sectional descriptive study[32] : $n = z^2pq/d^2$

Z is the standard normal deviate at 95% confidence interval, which is 1.96.

P is the proportion from a previous study on knowledge of women and utilisation of SBAs (43%)[33]:.

q is $1-p$ (57%).

d is the error margin, which is 5% (0.05).

$$n = \frac{1.96 \times 1.96 \times 0.43 \times 0.57}{0.05 \times 0.05} = 376$$

To compensate for non-responses and misplaced or improperly completed questionnaires, the calculated sample size was increased by 10% (0.10).

$$N = \frac{n}{1-X}$$

$$N = \frac{376}{1-0.1}$$

This gave a sample size of 418. The total sample size was then rounded off to 420.

Multistage sampling technique was used for selection of eligible study participants.

First stage: Osogbo has three LGAs: Olorunda, Egbedore and Osogbo LGAs. Two LGAs were chosen out of the three by simple random sampling technique using balloting.

Second stage: The list of all the health centres in the two selected LGAs was drawn, and three health centres were chosen per LGA by simple random sampling technique using balloting, making a total of six health centres.

Third stage: The number of mothers who attended child welfare clinic in all the six facilities were summed up (N). For each facility, we expressed the number of mothers in attendance (n1, n2… n6) as a fraction of the sum for all six facilities. This fraction was multiplied by the required sample size (420), and the result was the number of respondents recruited from that facility. This means that the number of respondents recruited in facility 1 was calculated as $\frac{n1}{N}$ x 420. Systematic sampling was then used to select eligible respondents per health facility until the desired sample size for each health facility was reached.

Data collection

A semi-structured, interviewer-administered questionnaire was used. Some parts of the instrument were adapted from standard instruments such as the NDHS questionnaire[34] and previous research studies,[24,25] while others were developed by the researchers from literature. The questionnaire was pre-tested among currently married women of childbearing age in Ilesa East LGA, and it was analysed for appropriateness and ease of understanding by participants. Necessary modifications and corrections were done before finally administering the questionnaire to the study participants.

Data management and analysis

Knowledge score: A total of eighteen

questions in section B of the questionnaire assessed knowledge. The correct answer was scored 1 point, while an incorrect one was scored zero. The overall knowledge score was calculated by summing the scores, and the mean score was computed to be 10. Women were considered knowledgeable about danger signs related to pregnancy and childbirth if their score was greater than or equal to the mean (10), and not knowledgeable if less.

Attitude score: Ten attitude questions, which had three choices—agree, disagree, and neutral—were asked through the questionnaire. For positive statements, "agree" was scored 1 point, and "neutral" and "disagree" were each scored zero. For negative statements, "disagree" was scored 1 point, and "agree" and "neutral" were each scored zero. The overall attitude score was calculated by summing all scores, and mean score was computed, which was 7. Respondents who scored up to and above the mean were considered to have positive attitude towards utilisation of safe delivery services, while those who scored below the mean score were considered to have negative attitude.

Filled questionnaires were manually checked for errors and omissions at the end of data collection. The obtained data were further entered into Statistical Package for the Social Sciences version 23 for cleaning and analysis. The data analysis involved generation of frequency distribution tables to describe the data. Binary logistic regression analysis was done to determine statistical relationships of independent variables with safe delivery practices, while multivariate logistic regression analysis was done to identify predictors of safe delivery practices, taking into consideration possible confounders. Before this step, variables too few to model were re-categorised to have adequate samples in each cell. Re-categorised variables included religion, ethnicity, educational status of respondent, educational status of respondent's husband, occupation of respondent, and occupation of respondent's husband. Level of statistical significance was set at p-value less than 0.05.

Ethical Approval
Ethical approval was obtained from the Ethical Review Committee of College of Health Sciences, Osun State University. Also, permission to conduct the study was taken from the management and staff of the six health centres where the study was conducted. Written informed consent was obtained from each participant after explaining the purpose of the study.

Results
Four hundred out of 420 questionnaires were analysed, giving a response rate of 95.2%. The mean age of respondents was 29 ± 6.1 years. Two hundred and fifty six (64.0%) were Christians, 352 (88.0%) were Yoruba, and 322 (80.5%) were married in a monogamous family setting. One hundred and ninety three (48.2%) had attained tertiary level of education and among their spouses, 229 (59.2%) had attained tertiary level of education. One hundred and seventy eight (44.5%) respondents and 137 (34.2%) husbands were semi-skilled workers. Three hundred and forty two (85.5%) respondents had less than three children. Table 1.
Out of the 400 respondents, 389 (97.2%) received ANC in their last pregnancies. Among these, 158 (39.5%) and 144 (36.0%) received ANC at health centres and at private hospitals respectively. Of the 400 respondents, 28 (7.0%) had ever had stillbirth and 39 (9.8%) had ever had an abortion. Three hundred and forty one (85.2%) respondents delivered their current babies in hospitals or health

centres. Table 2.

From Table 3, 247 (61.8%) and 257 (64.2%) correctly identified persistent vomiting and vaginal bleeding, respectively, as danger signs in pregnancy. Three hundred and twenty four (81.0%) and 311 (77.8%) identified prolonged labour (lasting more than 12 hours) and retained placenta, respectively, as danger signs during labour and delivery. Massive vaginal bleeding and afterpains were correctly identified as danger signs during the first week after delivery by 233 (58.2%) and 255 (63.8%) respondents respectively. Two hundred and four (51.0%) and 196 (49.0%) respondents had good and poor knowledge respectively on danger signs in pregnancy, during labour, and after delivery.

Three hundred and seventy four (93.5%) of the 400 respondents agreed that any pregnant woman could develop complications and 354 (88.5%) agreed that complications associated with delivery could be dangerous for a pregnant woman's health. Three hundred and seventy six (94.0%) and 372 (93.0%) agreed that a woman should plan her place of delivery ahead of time and that every pregnant woman needs a skilled attendant at birth, respectively. Two hundred and forty (60.0%) and one hundred and sixty (40.0%) respondents had positive and negative attitudes respectively to danger signs in pregnancy, during labour, and after delivery. Table 4.

Analysis of the association between uptake of safe delivery practices and socio-demographic status, reproductive history, categorised knowledge, and attitude, showed that age in categories, educational status of respondent, educational status of respondent's husband, and attendance at antenatal clinic in the last pregnancy were significantly associated with utilisation of safe delivery practices. The respondents who were less than 30 years old were 55% less likely to utilise safe delivery practices (p= 0.013). Also, respondents with tertiary education and those whose husbands had tertiary level of education were 43% (p=0.049) and 56% (p=0.004) less likely to utilise safe delivery practices respectively. Women who did not have ANC in the last pregnancy were 11.3 times more likely to utilise safe delivery practices during childbirth (p < 0.001).

There was no significant association between uptake of safe delivery practices and religion (p=0.418), ethnicity (p=0.407), marriage setting (p=0.376), occupation of respondent (p=0.171), occupation of respondent's husband (p=0.830), history of stillbirth (p=0.535), history of abortion (p=0.769), categorised knowledge (p=0.168), or categorised attitude (p=0.329).

The variables that showed significant association during bivariate analysis were used for the multivariable analysis to assess individual effects after controlling for other variables and the fitness of the model. After controlling for the effect of other variables, only ANC attendance in previous pregnancy was statistically associated with safe delivery practices. Women who did not attend ANC during their last pregnancies were 8.7 times more likely to practise safe delivery (p= 0.001). Table 5.

Table 1: Socio-demographic characteristics of respondents

Variable	Frequency	Percentage
Age (years)		
Less than 30	223	55.8
30? 39	158	39.5
40? 49	16	4.0
50 and above	3	0.7
Religion		
Christian	256	64.0
Muslim	143	35.8
Traditional	1	0.2
Ethnicity		
Yoruba	352	88.0
Igbo	26	6.5
Hausa	14	3.5
Others	8	2.0
Marriage setting		
Monogamous	322	80.5
Polygamous	78	19.5
Highest Educational status of respondent		
No formal education	7	1.8
Primary education	5	1.2
Secondary education	171	42.8
Tertiary education	193	48.2
Postgraduate	24	6.0
Highest Educational status of respondent's husband		
No formal education	4	1.0
Primary education	1	0.2
Secondary education	137	34.3
Tertiary education	229	57.2
Postgraduate	29	7.3
Occupation of respondent		
Unemployed/housewife	42	10.5
Unskilled worker	19	4.8
Semi-skilled worker	178	44.5
Non-manual worker	29	7.2
Managerial	57	14.2
Professional	75	18.8
Occupation of respondent's husband		
Unemployed	7	1.8
Unskilled worker	22	5.5
Semi-skilled worker	137	34.2
Non-manual worker	29	7.2
Managerial	46	11.5
Professional	159	39.8
Categorised total number of children		
Less than three children	342	85.5
Three or more children	58	14.5

Table 2: Respondents' reproductive history

Variable	Frequency	Percentage
Did you receive antenatal care during your last pregnancy?		
Yes	389	97.2
No	11	2.8
If yes, where did you attend the antenatal clinic? (n=389)		
Health centre	158	40.6
General hospital	60	15.4
\Teaching hospital	12	3.1
Private hospital	144	37.0
Traditional home/church	15	3.9
Have you ever had a stillbirth?		
Yes	28	7.0
No	372	93.0
Have you ever had an abortion?		
Yes	39	9.8
No	361	90.2
Where did you deliver the index baby?		
Hospital/health centre	341	85.2
Traditional birth attendant's place	15	3.8
Church/spiritual home	29	7.2
Home	15	3.8

Table 3: Knowledge of danger signs in pregnancy, during labour, and after delivery

Variable	Frequency (%)		Total (%)
	Yes (%)	No (%)	
Danger signs during pregnancy			
Persistent vomiting	247 (61.8)	153 (38.2)	400 (100.0)
Vaginal bleeding	257 (64.2)	143 (35.8)	400 (100.0)
Severe headache	249 (62.2)	151 (37.8)	400 (100.0)
Hypertension	251 (62.8)	149 (37.2)	400 (100.0)
Facial and hand swelling	182 (45.5)	218 (54.5)	400 (100.0)
Fits	138 (34.5)	262 (65.5)	400 (100.0)
Danger signs during labour and delivery			
Prolonged labour (>12 hrs)	324 (81.0)	76 (19.0)	400 (100.0)
Retained placenta	311 (77.8)	89 (22.2)	400 (100.0)
Excessive vaginal bleeding	242 (60.5)	158 (39.5)	400 (100.0)
Hypertension	224 (56.0)	176 (44.0)	400 (100.0)
Danger signs during the first week after delivery			
Massive vaginal bleeding	233 (58.2)	167 (41.8)	400 (100.0)
After pains	255 (63.8)	145 (36.2)	400 (100.0)
Fever	248 (62.0)	152 (38.0)	400 (100.0)
Offensive vaginal discharge	177 (44.2)	223 (55.8)	400 (100.0)
Fits	151 (37.8)	249 (62.2)	400 (100.0)
Hypertension	200 (50.0)	200 (50.0)	400 (100.0)
Face and leg swelling	172 (43.0)	228 (57.0)	400 (100.0)

Table 4: Attitude towards safe delivery practices

Variable	Frequency (%)		
	Agree (%)	Indifferent (%)	Disagree (%)
Any pregnant woman can develop delivery complication	374 (93.5)	15 (3.8)	11 (2.7)
Delivery complications can be dangerous for the health of the woman	354 (88.5)	24 (6.0)	22 (5.5)
Delivery complications can't be dangerous for the health of the newborn	212 (53.0)	30 (7.5)	158 (39.5)
A woman should plan ahead of time where she will give birth	376 (94.0)	9 (2.2)	15 (3.8)
A woman should not plan ahead of time how to get to the place where she will give birth	66 (16.5)	41 (10.2)	293 (73.3)
Every pregnant woman needs a skilled attendant at delivery	372 (93.0)	12 (3.0)	16 (4.0)
Being attended to by male health professional during delivery is very shameful and unethical	84 (21.0)	59 (14.8)	257 (64.2)
It is very shameful to deliver on the delivery bed in the labour ward	50 (12.5)	58 (14.5)	292 (73.0)
Women do not go to the health facility for delivery because it is too expensive	134 (33.5)	82 (20.5)	184 (46.0)
Women do not go to the health facility for delivery because the health workers do not treat them respectfully	99 (24.7)	78 (19.5)	223 (55.8)

Table 5: Factors associated with safe delivery practices, after adjusting for the effects of other variables

Variables	N (%)	COR (95% confidence limit)	p-value	AOR (95% confidence limit)	p-value
Age (years)					
Less than 30 *(Ref)*	223 (55.8)				
30? 39	158 (39.4)	0.452 (0.241, 0.848)	0.013*	0.605 (0.311, 1.175)	0.605
40 and above	19 (4.8)	0.507 (0.113, 2.279)	0.376	0.644 (0.141, 2.943)	0.644
Educational status of respondent					
No formal/Primary/Secondary *(Ref)*	183 (45.8)				
Tertiary/Postgraduate	217 (54.2)	0.571 (0.326, 0.998)	0.049*	1.056 (0.488, 2.284)	1.056
Educational status of respondent's husband					
No formal/Primary/Secondary *(Ref)*	142 (35.5)				
Tertiary/Postgraduate	258 (64.5)	0.436 (0.249, 0.762)	0.004*	0.480 (0.224, 1.028)	0.059
Did you attend ANC during your last pregnancy?					
Yes	389 (97.3)				
No	11 (2.7)	11.341 (3.208, 40.091)	<0.001*	8.667 (2.366, 31.752)	0.001*

(Ref), reference variable; ANC, antenatal care; COR, calculated odds ratio; AOR, adjusted odds ratio. *Significant variables at p-value <0.05 after adjusting for the effects of other variables*

Discussion

From the socio-economic backgrounds of these study respondents, the majority were formally educated and even semi-skilled workers, much like their partners. The average age of the respondents was in close range with that of the population of a similar study in Uganda,24 which was 26 ± 6.1 years. Further, the number of our respondents who were either not employed or involved in unskilled labour was much lower than what was found in the population of the study done in Uganda,24 most of whom were not employed and thus had peasant farming as the main occupation. This variation could be because our study was conducted in an urban setting, while the Ugandan study24 was conducted in a rural setting. Assessment of this study population's reproductive history showed that few respondents had history of stillbirth in previous pregnancies, but this figure was higher than the finding from a community study in Laotia,26 where only two women had experienced a stillbirth. However, the rate of previous stillbirth in this study was considerably lower than that obtained in a study in Southern Ethopia,[35] where more than one in ten respondents had history of pregnancy-related complications. In the study done in Uganda,24 nearly one in ten women reported previous stillbirth, and a third reported previous complicated or prolonged delivery.

A remarkable finding from our study is that during the last childbirth, most of the women had delivery in a health facility. This is highly commendable, compared to the findings of a study in which analysis of pooled data from 29 sub-Saharan countries showed that only 35.1% of all births occurred in urban areas and in health facilities.[36] In this present study, although the knowledge and attitude towards signs of danger in pregnancy, during labour, and after delivery were not significantly linked to hospital delivery, our analysis identified other factors that had statistically significant relationship with safe delivery practices such as giving birth in a health facility. Such statistically significant factors include the women's age, their ANC attendance during last pregnancy, and their level of education and that of their husbands. Contrary to expectation, women with tertiary and postgraduate levels of education were less likely to utilise hospitals for delivery/practice safe delivery. This finding supports empirical evidence from the World Health Organization,[37] and other similar recent studies from parts of Africa[35, 38-40] and Asia,[41-43] which showed that the same factors identified in this study are key drivers of the uptake of safe delivery services. However, findings in a Nigerian study showed that the chances of non-use of health services during delivery increased among women who were without formal education, were from poor families, were aged 25–34 years, were unmarried, and had never attended antenatal clinic.[37] This could be due to the fact that well-educated women and their partners may be knowledgeable about the danger signs in labour and can easily decide on when to approach healthcare professionals for assistance.

The greater use of safe delivery services by respondents who did not receive ANC in their last pregnancies may be due to poor pregnancy outcomes among this group. ANC services are closely linked with improved pregnancy outcome and hospital delivery, and from the point of pre-conceptional care, women should be encouraged to access ANC in order to have good pregnancy outcomes. Steps should also be taken to make ANC accessible and pleasant for pregnant women. These would include ensuring equitable distribution of

antenatal clinics so that every woman has one close to her place of residence. Furthermore, as long distance, many visits, and long clinic durations often discourage women from attending antenatal clinic,[44,45] health facilities should be encouraged to adopt the focused ANC proposed by the WHO, as opposed to traditional ANC. Focused ANC reduces the number of clinic visits and reduces their duration by categorising women based on their risk levels. It also ensures more efficient administration of antenatal clinics. Adopting focused ANC will therefore help to improve ANC uptake among women who are discouraged by frequent visits and long waiting periods. Increased ANC uptake will in turn improve the utilisation of safe delivery practices, such as delivery under the supervision of an SBA.

A limitation of the study is that data collected was based on self-report by the mothers which could not be verified since there were no records available to authenticate the reports. There was a possibility of recall bias by respondents, though the use of trained interviewers minimised this. Furthermore, the findings of this study cannot be generalised beyond urban areas as the study was facility-based, and the place of residence was not factored into the sampling of study participants.

Conclusion

Our findings show that the major determinant of safe delivery practices was attendance at antenatal clinic during last pregnancy. Women's age, their educational status and educational status of their husbands were also independently associated with safe delivery practices. There is a need to conduct qualitative studies among educated mothers in order to understand why there is poor utilisation of safe delivery services among them. There is also need for an implementation research to understand how best to promote antenatal check-up by SBAs in order to increase utilisation of safe delivery practices.

Conflict of Interest

The authors declare no competing interests.

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