

Determinants of Uptake of Health Facility Delivery among Women of Reproductive Age in Plateau State, Nigeria

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Abstract

Background: The peripartum period is crucial for the survival of the foetus, mother and newborn. Globally and especially in developing countries, millions of childbirths occur annually outside a health facility and thus without any assistance from a skilled attendant. The study was conducted to determine the factors that affect the uptake of health facility delivery among women of reproductive age in Plateau State, Nigeria.

Methods: Analysis of secondary data obtained from the 2018 Nigeria Demographic and Health Survey dataset was done. The survey collected data on a sample of women within the reproductive age group (15-49 years) who had live births in the 5 years preceding the 2018 survey in Plateau State using a two-stage cluster design. Information on these women was electronically captured using computer-assisted personal interviewing. The dataset was analyzed using Statistical Product and Service Solutions version 23.

Results: A total of 797 women were surveyed who had a mean age of 29.8 ± 6.6 years. The uptake of health facility delivery was 43.4% among the respondents. Determinants of health facility delivery were wealth index and literacy levels as respondents in the highest wealth quintiles (OR=14.1; 95%CI=4.1-48.7) and high literacy levels (OR=3.5: 95% CI=2.0-6.2 for the most literate) were more likely to deliver in health facilities.

Conclusion: There was poor uptake of health facility delivery with wealth and literacy levels being the determinants. Efforts to improve the uptake of health facility delivery should prioritize women of lower socioeconomic and educational status as targets.

Keywords: Delivery, Determinants, Health facility, Women of reproductive age

Introduction

The periods of childbirth and the immediate postpartum are crucial for the survival of mother and child. About three-quarters of all maternal deaths take place during delivery and in the immediate postpartum period. A critical strategy for reducing maternal mortality is making sure that all births occur in a setting where the assistance of skilled personnel is guaranteed. Globally an estimated 83% of deliveries occur in a health facility unlike sub-saharan Africa (SSA) where it is only 64%.¹ This partly explains why the level of maternal mortality is very high (542 per 100,000 live births) in SSA as the region accounts for the vast majority (two-thirds) of global maternal deaths.² If the current rate of institutional delivery uptake remains unchanged, at least an estimated 16 million deliveries in Africa will be unattended by skilled personnel by the year 2030.¹ Hospital deliveries are desirable because they are capable of preventing maternal deaths caused by complications arising during deliveries (severe bleeding, infection, high blood pressure during pregnancy and unsafe abortion), which account for 75% of maternal deaths.³

In 2017, Nigeria was estimated to have a very high maternal mortality ratio (MMR) of 917 per 100,000 live births, the highest among the 15 countries on “high alert” for maternal mortality, and accounted for nearly a quarter (23%) of the global maternal deaths that year.^{2,3} Despite numerous attempts to improve the access and utilization of institutional delivery in Nigeria such as the Subsidy Re-investment and Empowerment Programme Maternal and Child Health (SURE-P MCH) and the Nigeria States Health Programme Investment Project,^{4,5} the 2018 Nigeria Demographic and Health Survey (NDHS) showed that only 39% of live births between 2013 – 2018 occurred in a health

facility.⁶ In one of the local government areas of Plateau State, Jos South, only around 36% of childbirths occurred at a health facility.⁷

Previous studies revealed that sociodemographic characteristics such as age, marital status, educational status, employment status, place of residence, wealth quintile and partner's occupation, as well as obstetrics histories (such as timing and frequency of ANC attendance, parity, history of difficult labour), are important factors that determine the choice of place of delivery.^{7,8,9,10,11} Every woman requires quality care at the time of delivery because the timely detection and treatment of emergencies make a huge difference between survival and death.³ Hence, the need for delivery in a setting that is best prepared to handle emergencies that may arise as a large number of maternal and perinatal deaths can be avoided when all childbirths occur in a health facility. Published information on the uptake of health facility delivery in the entire Plateau State is limited, therefore, this study determined the level of uptake of health facility delivery and the associated factors among women of reproductive age in Plateau State. This was expected to inform and give insight into the factors that could be used to identify and prioritize high-risk groups for possible interventions to address the poor uptake of health facility delivery.

Methodology

Study area

Plateau State is in north-central Nigeria and is the twelfth-largest state in the country. It is bordered by the following states: Kaduna, Bauchi, Nasarawa and Taraba States. There are 17 Local Government Areas in the State, spread across three senatorial zones. The State has an estimated population of over 4 million people.¹² Plateau State has an estimated total of 1470 health facilities; of which

85.1%, 14.5% and 0.4% are primary, secondary and tertiary respectively. Up to 73% of the facilities are public-owned while 27% are private-owned.¹³ Women of reproductive age constitute nearly a quarter (24%) of the entire population of the State,¹⁴ however, only about 61% of pregnant women in the state go for antenatal care (ANC).¹⁵

Study design

This was a cross-sectional study that employed the use of secondary data from the 2018 National Demographic and Health Survey (NDHS). The interviews for the 2018 NDHS were conducted using computer-assisted personal interviewing and took place from August to December 2018.⁶ Permission to use the 2018 NDHS data was obtained from the Inner City Fund (ICF) International through its DHS website: <https://dhsprogram.com/>.

Sampling technique

The 2018 NDHS sample selection was performed using a two-stage cluster sampling involving the subdivision of each state into clusters known as enumeration areas (EAs), the stratification of EAs into rural and urban, and the selection of EAs from each stratum; 35 EAs were allocated to Plateau State (10 and 25 each from the urban and rural strata respectively). The second stage involved the systematic random selection of 30 households from each of the 35 selected EAs: totalling 1,050 households. All eligible women (who had a live birth in the last five years preceding the 2018 survey) aged 15 – 49 years in the 1,050 sampled households were selected including those who were permanent residents of the selected households or visitors who stayed in the households the night before the survey.

Data analysis

Analysis was done using the Statistical Product and Service Solutions (SPSS) software version 23. This study focused on women in Plateau State aged 15 – 49 years

whose last childbirth was in the 5 years preceding the 2018 survey. The respondents' place of delivery was categorised into either a health facility or a non-health facility. Health facility delivery was defined as having childbirth in a public or private health facility. Non-health facility delivery referred to having child births elsewhere such as the respondents' home or the home of a traditional birth attendant and other unspecified locations as reflected in the database.

Three stages of statistical analyses were employed: firstly, univariate analysis was used to describe the sociodemographic characteristics of the respondents and the place of delivery using frequencies and proportions. The second was a bivariate analysis using a chi-square test to explore the association between the sociodemographic characteristics and the place of delivery, and the third was a multivariate analysis using multiple logistic regression to identify predictors of health facility delivery among variables that were statistically significant on chi-square. At a 95% confidence level, a p-value of ≤ 0.05 was considered statistically significant.

Results

A total of 797 out of the women of reproductive age interviewed in Plateau State had childbirth in the five years (2013-2018) preceding the survey, representing about 26% of interview entries for the State. The mean age of the respondents was 29.8 ± 6.6 years with the age group 25 - 29 years constituting the largest proportion (29.7%). Seven hundred and fifty-six (94.8%) were married and 636 (79.8%) resided in a rural areas. Table 1. Two hundred and eighty-one (35.3%) of the respondents had given birth at least five times, 137 (17.2%) did not desire the pregnancy leading to the index birth, and 258 (32.4%) belonged to the poorest wealth quintile (Table 2). Table 3 shows

that 346 (43.4%) respondents had their last childbirth in a health facility.

The bivariate analysis showed that place of residence, ethnicity, educational and literacy level, wealth quintile, parity, employment status and health insurance coverage were significantly associated ($p < 0.05$) with the place of delivery (Table 4a

and Table 4b). On logistic regression, respondents belonging to the higher wealth quintiles were between 2 - 14 times more likely to give birth in a health facility compared to those in the poorest wealth quintile. Also, women who were able to read whole sentences were about 3.5 times more likely to give birth in a health facility compared to those who could not read (Table 5).

Table 1: Sociodemographic characteristics of the respondents (n = 797)

Characteristic	Frequency	Percentage
Age group (years)		
15-19	15	1.9
20-24	144	18.1
25-29	237	29.7
30-34	178	22.3
35-39	143	17.9
40-44	55	6.9
45-49	25	3.1
Mean age ± SD	29.8 ± 6.6years	
Current marital status		
Never in union	11	1.4
Married	756	94.8
Cohabiting	2	0.3
Widowed	9	1.1
Divorced	1	0.1
Separated	18	2.3
Place of residence		
Urban	161	20.2
Rural	636	79.8
Ethnicity		
Hausa	52	6.5
Igbo	8	1.0
Others (plateau indigenous etc.)	737	92.5
Highest educational level		
No formal education	191	24.0
Primary	235	29.5
Secondary	314	39.4
Tertiary	57	7.1
Literacy level		
Cannot read	460	57.7
Able to read only parts of a sentence	186	23.3
Able to read the whole sentence	151	19.0

Table 2: Obstetric and socioeconomic characteristics of the respondents (n = 797)

Characteristic	Frequency	Percentage
Parity (births)		
1-4	516	64.7
=5	281	35.3
Covered by health insurance		
Yes	14	1.8
No	783	98.2
Pregnancy leading to index birth desired		
Yes	660	82.8
No	137	17.2
Currently employed		
Yes	605	75.9
No	192	24.1
Wealth index		
Poorest	258	32.4
Poor	246	30.9
Middle	145	18.2
Rich	102	12.8
Richest	46	5.7

Table 3: Place of delivery among respondents

Place of delivery	Frequency	Percentage
Health facility	346	43.4
Non-health facility ⁺	451	56.6
Total	797	100.0

⁺ Non-health facility includes the respondent's home, traditional birth attendant's home and other homes not specified in the database.

Table 4a: Factors associated with the place of delivery among respondents

Variable	Place of delivery		Total	X ²	p-value
	Health facility (n = 346) f(%)	Non-health facility (n = 451) f(%)			
Age group (years)					
15-19	9(60)	6(40)	15(100)	8.852	0.182
20-24	63(43.8)	81(56.3)	144(100)		
25-29	104(43.9)	133(56.1)	237(100)		
30-34	86(48.3)	92(51.7)	178(100)		
35-39	52(36.4)	91(63.6)	143(100)		
40-44	25(45.5)	30(54.5)	55(100)		
45-49	7(28)	18(72)	25(100)		
Current marital status					
Never in union	7(63.6)	4(36.4)	11(100)	8.418 ⁺	0.170
Married	323(42.7)	433(57.3)	756(100)		
Cohabiting	2(100)	0 (0.0)	2(100)		
Widowed	6(66.7)	3(33.3)	9(100)		
Divorced	0 (0.0)	1(100)	1(100)		
Separated	8(44.4)	10(55.6)	18(100)		
Place of residence					
Urban	91(56.5)	70(43.5)	161(100)	14.113	0.0001*
Rural	255(40.1)	381(59.9)	636(100)		
Ethnicity					
Hausa	19(36.5)	33(63.5)	52(100)	14.372 ⁺	0.001*
Igbo	8(100)	0 (0.0)	8(100)		
Others	319(43.3)	418(56.7)	737(100)		
Highest educational level					
No formal education	51(26.7)	140(73.3)	191(100)	79.223	0.0001*
Primary	83(35.3)	152(64.7)	235(100)		
Secondary	163(51.9)	151(48.1)	314(100)		
Tertiary	49(86)	8(14)	57(100)		
Literacy level					
Cannot read	140(30.4)	320(69.6)	460(100)	102.016	0.0001*
Able to read only parts of sentence	90(48.4)	96(51.6)	186(100)		
Able to read the whole sentence	116(76.8)	35(23.2)	151(100)		

⁺Corrected chi-square, * Statistically significant

Table 4b: Factors associated with the place of delivery among respondents

Variable	Place of delivery		Total	X ²	p-value
	Health facility (n = 346) f(%)	Non-health facility (n = 451) f(%)			
Parity					
1-4	241(46.7)	275(53.3)	516(100)	6.459	0.011*
=5	105(37.4)	176(62.6)	281(100)		
Covered by health insurance					
Yes	12(85.7)	2(14.3)	14(100)	10.380	0.001*
No	334(42.7)	449(57.3)	783(100)		
Pregnancy leading to index birth desired					
Yes	287(43.5)	373(56.5)	660(100)	0.008	0.928
No	59(43.1)	78(56.9)	137(100)		
Currently employed					
Yes	282(46.6)	323(53.4)	605(100)	10.460	0.001*
No	64(33.3)	128(66.7)	192(100)		
Wealth index quintile					
Poorest	62(24)	196(76)	258(100)	94.043	0.0001*
Poorer	107(43.5)	139(56.5)	246(100)		
Middle	85(58.6)	60(41.4)	145(100)		
Richer	51(50)	51(50)	102(100)		
Richest	41(89.1)	5(10.9)	46(100)		

+Corrected chi-square, *Statistically significant

Table 5: Determinants of the uptake of health facility delivery

Variable	** AOR	95% CI for AOR	P-value
Wealth index quintile			
Poorest (ref)	1		
Poorer	1.780	1.181 - 2.683	0.006*
Middle	3.530	2.112 - 5.900	<0.001*
Richer	2.548	1.216 - 5.338	0.013*
Richest	14.151	4.115 - 48.664	<0.001*
Literacy level			
Cannot read (ref)	1		
Able to read only parts of sentence	1.512	0.991 - 2.307	0.055
Able to read whole sentence	3.490	1.951 - 6.244	<0.001*

** AOR = Adjusted Odd Ratio

*Statistically significant (p < 0.05).

Discussion

To achieve the Sustaining Development Goal (SDG) 3.1 target which seeks for all

countries to reduce the Maternal Mortality Ratio to less than 140 per 100,000 live births, increasing the proportion of births

attended by skilled personnel, to ensure women receive the necessary supervision and care during labour and the immediate postpartum period was identified as one of the viable approaches.¹⁶ Nonetheless, over half of the respondents in this study did not have their deliveries in a health facility, meaning that these childbirths occurred in settings not optimally prepared to promptly recognize and handle emergencies that may arise during delivery. The suboptimal uptake of institutional delivery in this study may partly be explained by the finding that the respondents were predominantly in rural dwellings and a previous study had shown that significantly higher proportions of deliveries in rural Nigeria are conducted at home.¹⁷ Additionally, the fact that over half of the women belonged to households in either the poor or poorest wealth quintile may have underpinned the poor utilization of health facility delivery among the respondents in this study because poverty is a major barrier to accessing healthcare services.¹⁸

A similar study in Plateau State conducted in a rural community revealed that only about a third of the respondents had their last childbirth in a health facility.⁷ Conversely, another study in Plateau State reported that more than half of the respondents had their last deliveries in a health facility. Even though this study was carried out in a rural community, the relatively higher proportion of institutional delivery may be attributable to the proximity of the study area to the State's capital city and the fact that over 90% of the respondents were employed and therefore had earning power.¹⁹ The paucity of human resources for health in our setting as an important feature of our weakened health system,²⁰ makes it nearly impossible for home deliveries to be supervised by skilled health workers as is

obtainable in the developed world. Therefore, home deliveries are likely to stall the realization of sufficiently reducing maternal mortality.

In this study, belonging to a wealth quintile above the poorest category and being literate were identified to be the determinants of the uptake of institutional delivery. General literacy and reading ability are essential for optimal health literacy, and health literacy impacts health service utilization because low health literacy is associated with poor access to and utilization of medical services.²¹ Apart from being a significant barrier to accessing healthcare services, poverty is also related to education and literacy, both of which in turn limit access to information on appropriate health-promoting and seeking behaviour. As a result, poverty and low literacy levels limit access to and utilization of health services, including health facility delivery with skilled attendance at birth.^{18,21} The determinants revealed in this study align with those found in other studies conducted in Nigeria and other parts of sub-saharan Africa^{7,9,10,19} Meanwhile, other studies across developing countries such as Indonesia, Ethiopia, and several countries across sub-saharan Africa found other factors including age group, marital status, place of residence, ANC attendance, parity, educational level, working status, history of difficult labour, and partner's occupation to significantly influence the uptake of institutional delivery.^{8,9,10,11}

Delivery outside health facilities predominates in Plateau State which may undermine attempts at reducing maternal mortality through the presence of skilled attendants at deliveries as proposed by renowned global and national commitments. This study underscores the role of educational and economic

empowerment in enhancing the uptake of health facility delivery. Further research is needed to explore the barriers to health facility delivery in this location.

Conclusion

Over half of the women of child-bearing age in Plateau State have their childbirths outside a health facility. Belonging to higher wealth quintiles and being literate were found to be determinants of the uptake of institutional delivery. Therefore, it is recommended that the government and its partners should improve and consolidate extant female education and empowerment drives alongside other strategies as a means to improve the utilization of health facilities for childbirth in Plateau State in order to realize SDG three.

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