Journal of Sustainable Development in Africa (Volume 22, No.4, 2020)
ISSN: 1520-5509
Clarion University of Pennsylvania, Clarion, Pennsylvania

FACTORS INFLUENCING MATERNAL HEALTH SERVICE UTILIZATION IN A SEMI-URBAN COMMUNITY IN NORTH-CENTRAL NIGERIA

Saater Igyuse[1], Marie Claire Van-Hout[2], Rose Khatri[3]

Public Health Institute, Liverpool John Moores University, Liverpool, UK[1]; Public Health Institute, Liverpool John Moores University, Liverpool, UK[2]; Public Health Institute, Liverpool John Moores University, Liverpool, UK[3]

ABSTRACT

Maternal mortality is a major global health problem particularly in low- and middle-income countries (LMIC), and the huge inequality between the high and the low-and middle-income countries remains a great sustainability concern. In sub-Saharan Africa, Nigeria continues to be one of the countries with the poorest maternal health outcomes with a mortality ratio of over 1000 per 100,000 live births in its Northern region. While there are many determinants of maternal mortality, low utilization of maternal health services (MHS) is a critical factor. The core aims of this study were to assess the utilization of MHS in a semi-urban community of Akpehe, in Makurdi, Central Nigeria and examine factors that might account for MHS utilization. The study used a survey method with a combination of open and closed-ended questions administered to women of reproductive age between 18 and 49 years who had a live birth in the past five years. Univariate and bivariate data analysis were conducted to better understand the association between the independent and the dependent variables. The results highlighted that the antenatal care (ANC) utilization rate was 61%, yet health facility delivery rate was only 38% and postnatal care (PNC) utilization a mere 26.6%. The variables with the greatest influence on MHS utilization were educational level and occupation of the woman and their average household income. There was no correlation between maternal age or marital status on MHS utilization. The study recommends that in order to improve the maternal health outcomes, there needs to be an inter-sectorial collaboration that will increase girl-child education, improve the economic condition of the semi-rural women, and ensure that MHS are accessible, affordable and of good quality.

Keywords: Maternal mortality, Antenatal care, Postnatal care, Hospital delivery, Skilled Birth Attendants, Maternal Health Services Utilization, Nigeria.

INTRODUCTION

Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period[1.] Access and utilization of quality health services during pregnancy, at the time of delivery and in the post-natal period is critical for the survival and well-being of the mother and newborn [2]. Though pregnancy is a normal physiological event, childbearing remains one of the most hazardous experiences that a woman engages in [3]; and for many women in LMIC's it is often associated with suffering, ill health and child and maternal fatalities[4]. Critical to the success in reducing maternal deaths is the provision of maternal health care services such as antenatal care (ANC) and skilled birth assistance (SBA) in an equitable manner such that these services are available in the entire health system owing to its important role in ensuring safe motherhood and the overall well-being of families and communities.[5,6.]

The World Health Organization (WHO) estimates that globally, more than half a million women lose their lives in the process of childbearing every year; and of these deaths, around 99% are from LMIC's[3]. This increasing gap between utilization of maternal health services between the high and low-income countries is a growing concern for the developing countries aiming to achieve the sustainable development goals (SDGs)[7,8]– One reason for this is the inequalities in availability, access and utilization of antenatal (ANC), delivery, and postnatal care (PNC) services [9]. It is estimated that approximately 97% of pregnant women in high-income countries (HIC) access ANC and 99% access skilled birth attendants (SBA) and quality maternal health services (MHS) at delivery [9]. In contrast, in LMIC's only 65% and 53% of women access ANC and skilled obstetrics services at birth, respectively [10]. These differences in availability, access and utilization of MHS could account for the high maternal mortality in LMICs.

MHS utilization has been shown to improve maternal health outcomes through prompt detection and management of these causes of maternal deaths, such as prophylactic treatment of malaria and the treatment of high blood pressure to prevent eclampsia. In this regard, the WHO has increased the number of required ANC contacts from a minimum 4 visits to 8 to ensure more contact between the expectant mothers and the healthcare professional[3]. A critical factor in making advances in the reduction of maternal deaths is knowing the causal mechanisms of maternal mortality and developing effective policy and health intervention programs to address these causes.

The Millennium Development Goals' (MDG) global assessment of country-level progress in achieving the targets of MDG-5 (to improve maternal health) revealed that Nigeria was one of the 26 countries categorized as having made no progress in improving maternal health outcomes [11]. Indeed, Nigeria was one of four countries that had experienced an increase in maternal mortality rates (MMR) [12]. Although, Nigeria accounts for less than 2% of world population, it accounts for about 14% of the global total of MMR, and the second largest contributor of maternal deaths worldwide after India [13]. Notably, the northern region of Nigeria has the highest maternal mortality ratio of over 1000 per 100,000 live births [14]. In rural areas of northern Nigeria, several barriers to MHS utilization have been identified including: poor road networks, challenging terrains, lack of support from the family, community or health professionals, reliance on other people for decision-making, cost, cultural concerns such as continued use of traditional health providers, beliefs, and long distances to life-saving healthcare facilities [15]. The five major causes of maternal deaths in Nigeria are severe bleeding, sepsis, hypertensive disorders in pregnancy, unsafe abortions and obstructed labour [16]. Though much has been achieved through the MDGs in reducing maternal deaths, post-MDGs evaluation shows that progress remains uneven across and within countries, as underutilization of critical maternal health services remains disproportionate between the affluent and the marginalized communities.[17,18] These sustainability concerns necessitated its inclusion in the present sustainable development goals. The

maternal health target in the Sustainable Development Goals (SDGs) is to further the agenda of the MDGs and reduce the global maternal mortality ratio from the present level of 216 per 100,000 live births to less than 70 per 100,000 live births by year 2030 [19].

Despite the importance of MHS utilization, health financing particularly in LMICs remains an important determinant of health services utilization. However, the predominant approach in low-income settings like Nigeria is out-of-pocket, with the National Health Insurance Scheme (NHIS) coverage being low with about 4% of population enrolled in the Scheme [20]. The result is that, the vast majority of Nigerians pay for their healthcare out of personal finances, and even for those covered under the scheme, not all services (and medications) are provided for free. This is particularly the case for maternal health care services utilization in the LMICs due to women's lower socioeconomic status [21] and lack of empowerment opportunities and gender inequality [22].

Hence, the main aim of this study was to explore the various individual, social and structural factors influencing MHS utilization in a semi-urban community in Central Nigeria. The focus was on identifying a number of socio-economic features and demographic characteristics of those utilizing and not utilizing MHS in order to better understand the determinants of uptake and retention along the ANC-Delivery-PN continuum, and in so doing inform an improved MHS response.

METHODOLOGY

The study was carried out in the semi-urban community of Akpehe, Makurdi in the Benue state, officially classified as a North-Central or Middle Belt state. With a total land area of 30, 800 sq. km, Benue state has a population of 4,253,641 comprising of 49.6% females and 50.4% males [23]. It is predominantly a Tiv ethnic community with most people being Christians by religion and farmers by occupation [24]. The 2013 NDHS revealed 46% of women had attained secondary or higher level of education with a literacy rate of 52.8%. In comparison, 76.7% of men had attained a secondary or higher level of education with a literacy rate of 92.6%. The national minimum wage is about 18,000 Naira (46 USD).

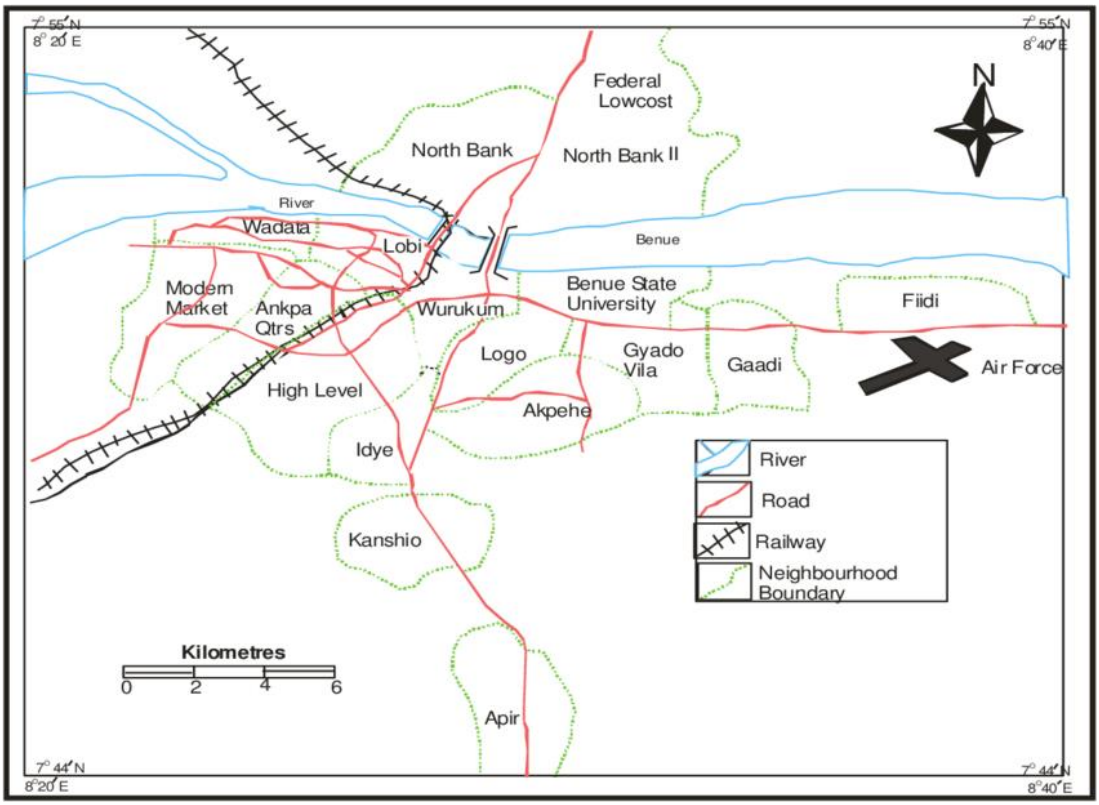

Figure 1: Map of Makurdi showing Logo and Akpehe communities

Source: Aov [25].

Study Design

The study design was a community-based cross-sectional descriptive study with participants selected based on the inclusion and exclusion criteria set for the study. Primary data was collected via a survey with closed and open-ended questions designed to investigate the pattern of maternal service utilization in a semi-urban community of Akpehe, Central Nigeria. To ensure the validity of the questionnaire, a pre-test pilot was administered with seven individuals from the target population. Responses from these participants were used to adjust the questionnaire prior to the administration to the general population.

Sampling and Sample Size

Sample size was calculated using the Cochran formula

$$n = \frac{Z^2pq}{e^2}$$

Where: n= sample size

Z= degree of confidence. (In this case 95%).

p= estimated proportion of population which has the attributes (estimated to be 20% of the population).

q= 1-p

e= desired level of precision (margin of error for this research was 7.5%)

$n= 1.96^2 x\ 0.16$

0.075^2

= 109.

Though the estimated sample size was 109 women, the actual sample size obtained was 95 participants.

A convenience non-probability sampling method was used to recruit participants as it presented a less expensive and more time-friendly approach considering the time available for the research [26]. With the help of a gatekeeper in identifying and recruiting participants in each household, all households were visited by the researcher and a female assistant. This was based on the assumption that some potential participants would prefer to talk to a female. The inclusion criteria for participation were women in the 18-49 age group who had at least one live birth in the past five years. Women who had more than one child were asked specifically about the last childbirth. This was to eliminate recall bias as the participants could more easily remember recent events. The choice of a semi-urban community was based on the assumption that participants would include women from both urban and rural backgrounds.

Ethical approval for the study was sought and obtained from the Benue State Ministry of Health and Human Services and the Liverpool John Moores University Ethics committee in 2018. Each participant was provided with a participant information sheet (PIS) which was made available in both English and the local Tiv dialect. This provided participants with information about the study so they could make an informed decision. Consent for the research was via implied consent stated on the questionnaire. Confidentiality was maintained through anonymizing the questionnaires, as such, it was not possible for participants to be identified or opt out after completing the questionnaire. It was also made known to participants that their participation was voluntary, and they could opt out of the research at any time for any reason before the completion of the questionnaire and were also not compelled to respond to all the questions.

The data was manually checked for completeness, entered into SPSS Version 23 Statistical Software and analyzed descriptively and assessed correlations. The study analyzed the predictors of three indicators (considered as dependent variables) of use of MHS:

1) ANC usage, which was defined in terms of utilisation of ANC services at least once during the last pregnancy of participants.

2) Place of Delivery (POD), which was categorised as the last childbirth of participants having occurred at either a recognized health facility or at home. This measure also assessed the presence of healthcare professional or SBA during delivery.

3) PNC, defined as general care of both the mother and new-born receiving a medical check-up in a healthcare facility within six weeks of childbirth.

The study also assessed the predictors of each of these indicators separately by matching the same with certain independent variables (such as; age of the participants, their marital, educational, and occupational status, along with salary (as a measure of socio-economic status).

RESULTS

Profile

A total of 95 participants completed the survey. All the participants were Christian by religion with about 22% having a tertiary level of education and 9.5% with no formal education. Participants who considered themselves self-employed constituted about 43.6% and 18% identified as not working. The age group with the highest frequency was 25-31 years. In terms of average monthly income, most participants (59.7%) earned 17,000 Naira (43 USD) or less while just 2.8% earned above 71,000 Naira (181 USD) per month. Married women, staying with their husbands accounted for about 82.1%). A complete profile of participants is found on Table 1 below.

Table 1: Profile of Participants

Variables	**Frequency (%)**
Level of education	
Tertiary	21 (22.10)
Secondary	46 (48.40)
Primary	19 (20.00)
No formal education	9 (9.50)
Occupation	
Self employed	41 (43.60)
Civil servant	18 (19.20)
Farming	18 (19.20)
Not working	17 (18.00)
Age	
18-24	21 (22.10)
25-31	39 (41.10)
32-38	19 (20.00)
>38	16 (16.80)
Average Income	
0-17,000	43 (59.70)
18,000-35,000	19 (26.40)
36,000-53,000	6 (8.30)
54,000-71,000	2 (2.80)
>71,000	2 (2.80)
Marital Status	
Married (staying with husband)	78 (82.1)
Married (not staying with husband)	4 (4.20)
Divorced	3 (3.20)
Unspecified	10 (10.50)

Level of MHS utilization

The results identified that ANC utilization was 61% for women who attended at least one ANC with 38.9% of the sample saying that they had not attended any ANC in their last pregnancy. About 56.8% gave birth at home in their last pregnancy while health facility delivery was 43.2%. Attendance for PNC in a healthcare facility was just 26.6% compared to 73.4% who did not attend.

Table 2: Utilization of Ante-Natal Care, Post-Natal Care and Health Facility Delivery in Akpehe Community (as observed by current study)

Level of ANC utilization (N=95)		**Level of delivery at a Health facility (n=88)**		**Level of PNC utilization (n=94)**	
	Frequency		*Frequency*		*Frequency*
Use	58	Health facility	38	Use	25
Non-use	37	Home	50	Non-use	69
Total	95	Total	88	Total	94

The study found a relationship between average household income and MHS utilization as 73.8% of respondents that had attended ANC earned above the national minimum wage of 18,000 (46USD) whereas 95.8 of those who did not utilize ANC earned below the national minimum wage. In terms of delivery, 73.3% of women who delivered in a healthcare facility earned above the national minimum wage whereas 78.1% of women who delivered at home earned below this threshold. In terms of post-natal care, 85.7% of those who utilized it earned above the minimum wage compared to 75.6% of those who did not use the service earning below the minimum wage.

The other variable that showed a positive correlation with MHS utilization was occupational status. Though, there was a similar trend between women who were “self-employed” in both the utilization and non-utilization groups, this could be, because most women in the communities had personal business they were involved in such as tailoring and hairdressing. Perhaps not surprisingly those who were “civil servants” had a higher utilization rates while those who were “not working” had a lower rate of utilization as civil servants are more educated and have a higher income to pay for services not covered under health insurance in the country.

The age group with the highest ANC utilization was 25-31 years, approximately 53.4% of the sample and the lowest was the18-24 age range who came highest for non-utilization with 40.5%. For place of delivery, the age group with the highest frequency was 25-31years for women who delivered at a health facility with a figure of 50.0%. The highest proportion of women who delivered at home was also from the same age group of 18-24 years with 36.0%. In terms of PNC utilization, the same age group of 18-24 years accounted for the highest PNC utilization with 44.0% and non-PNC utilization group with 39.1%. Regarding marital status, there were no significant differences between the utilization and non-utilization groups. (See Table 3).

Table 3: Levels of Maternal Health Services Utilization in Akpehe community in North-Central Nigeria.

	ANC Utilization (n=58)	Non-ANC Utilization (n=37)	Health facility Delivery (n=38)	Home Delivery (n=50)	PNC Utilization (n=25)	Non-PNC Utilization (n=69)
Level of Education	R=0.436	P=0.000	R=0.560	P=0.000	R=0.460	P=0.000
Tertiary	20 (34)	2 (5.4)	17 (44.7)	3 (6.0)	14 (56.0)	8 (11.6)
Secondary	29 (50)	19 (48.6)	18 (47.4)	21 (42.0)	10 (40.0)	34 (49.3)
Primary	9 (15.5)	8 (24.3)	3 (7.9)	17 (34.0)	1 (4.0)	19 (27.5)
No formal education	0 (0)	9 (21.6)	0 (0.0)	9 (18.0)	0 (0.0)	8 (11.6)
Occupation	R=0.520	P=0.000	R=0.547	P=0.000	R=-0.463	P=0.000
Civil servants	18 (31.3)	1 (2.7)	13 (34.2)	3 (6.0)	13 (52.0)	6 (8.7)
Self-employed	29 (50.0)	12 (32.4)	22 (57.9)	19 (338.0)	11 (44.0)	29 (42.0)
Farming	8 (13.8)	10 (27.0)	3 (7.9)	14 (28.0)	1 (4.0)	17 (24.6)
Not working	3 (5.2)	14 (37.8)	0 (0.0)	14 (28.0)	0 (0.0)	17 (24.6)
Average Income	R=0.658	P=0.000	R=0.534	P=0.000	R=0.650	P=0.000
>71,000	2 (5.3)	0 (0.0)	2 (6.6)	0 (0.0)	1 (4.8)	0 (0.0)
54,000-71,000	2 (5.3)	0 (0.0)	1 (3.3)	1 (3.1)	2 (9.5)	0 (0.0)
36,000-53,000	6 (15.8)	0 (0.0)	7 (23.3)	0 (0.0)	6 (28.6)	0 (0.0)
18,000-35,000	18 (47.4)	1 (4.2)	12 (40.0)	6 (18.8)	9 (42.9)	10 (24.4)
0-17,000	10 (26.3)	23 (95.8)	8 (26.7)	25 (78.1)	3 (14.3)	31 (75.6)
Age	R=0.164	P=0.113	R=0.44	P=0.686	R=0.198	P=0.056
18-24	6 (10.3)	15 (40.5)	7 (18.4	14 (28.0)	2 (8.0)	19 (27.5)
25-31	31 (53.4)	8 (21.6)	19 (50.0)	18 (36.0)	11 (44.0)	27 (39.1)
32-38	11 (18.9)	8 (21.6)	6 (15.8)	12 (24.0)	6 (24.0)	13 (18.8)
>38	10 (17.2)	6 (16.2)	6 (15.8)	6 (12.0)	6 (24.0)	10 (14.5)
Marital status	R=0.078	P=0.453	R=-0.66	P=0.539	R=-0.66	0.527
Married (staying with husband)	46 (79.3)	32 (86.5)	32 (84.2)	39 (78.0)	21 (84.0)	55 (79.7)
Married (staying without husband)	4 (6.9)	0 (0.0)	1 (2.6)	3 (6.0)	2 (8.0)	2 (2.9)
Divorced	2 (3.4)	1 (2.7)	0 (0.0)	2 (4.0)	1 (4.0)	2 (2.9)
Unspecified	6 (10.3)	4 (10.8)	5 (13.2)	6 (12.0)	1 (4.0)	10 (14.5)

Correlational Tests

Correlations were observed in the data. The Pearson Correlation was used to test the statistical correlation between the variables and the utilization of maternal health services. The demographic variables (age and marital status) showed a weak positive correlation with r=0.164 and r=0.078 for age and marital status respectively. The study observed a correlation of moderate strength between the socio-economic variables and the use of ANC with correlation coefficients of r=0.436, r=0.658 and r=0.520 for education, average income and occupation respectively.

Chi square and Pearson Correlation between the variables and place of delivery for any relationship were conducted. The P-values of two demographic characteristics in the study shown above (Age=0.686, Marital status=0.539) reveal there is no significant relationship between these variables and the use of healthcare facility for childbirth. There exists a weak correlation between the age of participants (r=0.044) and health facility delivery and indeed a negative correlation between marital status with an r= -0.66. There is also a moderate correlation between the socio-economic variables and health facility delivery (r=0.560 for education, r=0.534 for age and r=0.547 for occupation).

For PNC utilization, the p-values for the demographic characteristics of participants was 0.56 and 0.527 for age and marital status respectively implying no significant relationship between the demographic characteristics and utilization of PNC. The correlation coefficients of r=0.198 for age and r= -0.66 for marital status shows a low correlation with an actual negative value for marital status. The socio-economic variables show a negative correlation (r= -0.463) for occupation and a significant relationship between the socio-economic variables and utilization of PNC as evidenced with p-values = 0.000 in the three variables. The correlation coefficients of education and income (r=0.460 and r=0.650) show a moderate to high strength.

DISCUSSION

We present here the findings from our study a cross sectional survey study investigating MHS utilization in Central Nigeria.

Findings with regard to uptake of ANC services were similar to a study carried out in 2009 that also measured MHS utilization among women in Nigeria, and reported significantly lower utilization rates (60.3%) as compared to those reported in Ghana (91.9%) and Cameroon (83.4%) [13, 27]. Sub-Saharan African countries often report the use of traditional ANC services when required; the limited data surrounding the use of these services make it difficult to assess their true benefits [28]. The use of ANC, on the other hand, aims to ensure the safety of mother and the unborn child, by identifying potential problems such as anemia and high blood pressure and educating to-be-mothers regarding various immunization processes as well as on general health counselling- with such services proving to be significantly advantageous in not just developing countries but globally [29]. Findings from this Nigerian study with regard to factors impacting on ANC uptake such as low education attainment, low monthly income and younger age, are similar to those reported in 2015 by other authors with accessibility and affordability proving to be central to uptake [29].

Compared to ANC attendance, this study observed the utilization of PNC to be significantly less with only 26.6% (n=25/94) of participants reporting to have accessed this service. The independent variables correlated with PNC did, however, follow similar patterns to ANC with significant variability dependent on educational attainment, socio-economic factors and age. A study conducted in 2009 also reported educational attainment to have an effect on PNC use (this study found only 41.2% of Nigerian mothers to have utilized PNC) [13]. However, the study did observe that unlike ANC, the use of PNC did not significantly vary while using health services availability and accessibility as an indicator. A 2016 study by Somefun and Ibisomi also found that 37% of Nigerian mothers had utilized PNC services [30]; similar to this study. In addition, Babalola and Fatusi in 2009, and Somefun and Ibisomi found that around 61% of women with no formal education did not utilize PNC with 42% of those women falling in the 25-34 age group [30]. This suggests that while, improving the cost and access to maternal health services is important, education and awareness of critical services that improve maternal health must be given priority.

Finally, 56.8% (n=50/88) of this study population had a home delivery which correlates with other studies reporting only 43.5% of childbirths in Nigeria taking place in a formal health care facility with the presence of an SBA. There is a strong evidence based on the inverse relationship between maternal deaths and the presence of SBA during childbirth [31].

Improving care and overview of socio-economic/ demographic characteristics

As observed in the findings above, the utilization of ANC is relatively higher than the presence of a SBA during childbirth or accessing PNC among women in this sample. This finding is consistent with previous studies conducted in Nigeria [32, 33].

Babalola and Fatusi identified differences in service provision with ANC coverage in Nigeria having higher geographical distribution than skilled and institutional delivery [13]. Due to the sparse distribution, many primary healthcare facilities remain poorly staffed and not equipped to provide 24-hour services which has been cited as a major reason in discouraging women in seeking these services during labour[34]. In their 2013 study, Idris *et al* reported 52.7% of participants reporting better healthcare services (and provision of equipment) to be the major factor requiring attention to improve MHS usage patterns [35]. This study reported that a good percentage of Nigerian women knew of the risks and benefits regarding POD, however, very few chose the formal healthcare route linking this primarily due to the uncertainty in the provision of care. Older studies also found that some Nigerian women choose indigenous (traditional) maternal health provision instead of modern care due to the quality of care in these establishments or by traditional birth attendants (TBA). TBA's were reported by participants to provide more compassionate care and give more attention to interpersonal relationships [34,36].

Significant correlations were observed in this study with regards to age, education and socio-economic factors. ANC non-utilization was mostly observed in the youngest age group (18-24) while PNC non-utilization was observed through ages 18-31. These findings are similar to other studies where younger less educated women were less likely to take up PNC services[16,30]. Whether this is a lack of awareness, opportunity, cost implication or decision related reason it is something worthy of further exploration. Educational attainment was observed as a major factor governing all three indicators; women with no formal education were least likely to utilize ANC and PNC services. This link between education and MHS utilization is well reported in the literature with the health-seeking behavior-education nexus exerted through several pathways [37]. Educational attainment has been associated with enhanced autonomy levels, greater knowledge of health service availability and accessibility, as well as a general higher level of health awareness [13]. Higher educational attainment could also reduce the power differential between health providers and service users allowing them to feel more comfortable with services provided due to increased self-confidence and self-worth [38]. Finally, women with higher incomes were observed to be more likely to use MHS services; this link has also been associated with a general improved knowledge of healthcare service benefits, and in working women being comfortable utilizing their funds on their own health [38].

LIMITATIONS OF THE STUDY

The use of a convenience, non-probability sampling method was the major limitation to this study, with the obvious problem of non-representativeness of the sample. We recognize the study is small scale and confined to one locality. Other variables that could influence service utilization such as culture and beliefs, decision-making and quality of service could not be examined due to the limited timeframe. There was missing data on variables such as income, as many participants did not feel comfortable sharing information about their income. This had the tendency to influence the results presented causing non-response bias.

CONCLUSIONS

Low uptake of maternal health services in this study was mostly associated with educational and socio-economic factors. Other determinants that were included in this study did vary in level of significance depending on the type of maternal service. The study highlights the need to address the barriers that hinder MHS utilization in Nigeria, and by understanding these structural determinants of retention in care, inform an enhanced service response. Healthcare leaders in the country must devise ways of addressing these barriers in a more sustainable way, by making the education of the girl-child a priority, and improving the economic condition of rural women through job creation and poverty reduction measures that

will empower these women to take care of their healthcare needs. This will also bridge the inequality gap in maternal health service utilization between semi-rural and urban women, promote social equity and aid the overall economic development of these women.

Further, rather than only focusing on expansion of MHS, attention must also be given to improve the quality of services within existing platforms as a viable sustainability agenda. Improving quality of care not only improves service user satisfaction but saves lives. In addition, community-based reproductive health literacy should be developed to ensure that all family members are aware of the importance of MHS for the safety and wellbeing of mothers and infants. If cost is a factor of MHS utilization this needs to be considered at policy level. Many LMIC's have significantly reduced or subsidized the cost of MHS for families on low income and this should be advocated in the Nigerian context. Access to the National Health Insurance Scheme must be expanded to include basic maternal health services for all, such that, funding of MHS no longer serves as a hindrance to care. The current situation where urban women under the employment of the federal government benefit from the social insurance program while the rural and semi-urban women have to pay out-of-pocket for health needs creates an imbalance that further widens the inequality that exists between these groups.

REFERENCES

Mehari K, and Wencheko E. Factors affecting maternal healthcare services utilization in rural Ethiopia: a study based on the 2011 EDHS data, *Ethiopian Journal of Health Development* 2013 vol.27, (1): 16–24

Shrestha G. Factors Affecting Maternal Health Care Services Utilization in Nepal: Insight from the Nepal Demographic Health Survey 2006 and 2011. *Nepalese Journal of Statistics* 2017; (1) 55-72.

Zelalem AD, Belayihun B, Teji K and Admassu AD. Factors Affecting Utilization of Maternal Health Care Services in Kombolcha District, Eastern Hararghe Zone, Oromia Regional State, Eastern Ethiopia. *International Scholarly Research Notices* 2014, pp.1-7.

World Health Organization. Maternal Health, 2008 [cited 2018 November 02]. Available from: URL:http://www.who.int/topics/maternal_health/en/.

McNamee, P., Ternent, L. and Hussein, J., 2009. Barriers in accessing maternal healthcare: evidence from low-and middle-income countries. *Expert Review of Pharmacoeconomics & Outcomes Research*, 9(1), pp.41-48.

Choulagai, B., Onta, S., Subedi, N., Mehata, S., Bhandari, G., Poudyal, A., Shrestha, B., Mathai, M., Petzold, M. and Krettek, A., 2013. Barriers to using skilled birth attendants' services in mid- and far-western Nepal: a cross-sectional study. *BMC International Health and Human Rights*, 13(1).

Cohen, R., Alfonso, Y., Adam, T., Kuruvilla, S., Schweitzer, J. and Bishai, D., 2014. Country progress towards the Millennium Development Goals: adjusting for socioeconomic factors reveals greater progress and new challenges. *Globalization and Health*, 10(1).

Bobo, F., Yesuf, E. and Woldie, M., 2017. Inequities in utilization of reproductive and maternal health services in Ethiopia. *International Journal for Equity in Health*, 16(1).

Iyaniwura C, and Yussuf Q. Utilization of Antenatal care and Delivery services in Sagamu, South Western Nigeria. *African Journal of Reproductive Health / La Revue Africaine De La Santé Reproductive* 2009; *13*(3), 111-122.

Family Care International and the Safe Motherhood Inter Agency Group, 2002.

http://www.safemotherhood.org/.

Ahmed S, Li Q, Liu L, and Tsui A. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *The Lancet* 2012; 380(9837), pp.111-125.

Abubakar R, Yohanna S, and Zubairu H. Cultural perceptions influencing obstetric complications among women in Kaduna, Northwestern Nigeria. *Nigerian journal of clinical practice* 2018; 21(7) pp. 832-839

Babalola S, and Fatusi A. Determinants of use of maternal health services in Nigeria-looking beyond individual and household factors. *BMC pregnancy and childbirth* 2009; *9*(1), p.43.

Doctor H, Olatunji A, Findley S, Afenyadu G, Abdulwahab A, and Jumare A. Maternal mortality in northern Nigeria: findings of a health and demographic surveillance system in Zamfara State, Nigeria. *Tropical Doctor* 2012; 42(3), pp.140-143.

Atuoye K, Amoyaw J, Kuuire V, Kangmennaang J, Boamah S, Vercillo S, Antabe R, McMorris M, and Luginaah I. Utilisation of skilled birth attendants over time in Nigeria and Malawi. *Global Public Health* 2017; 12(6), pp.728-743.

Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, Gülmezoglu AM, Temmerman M, and Alkema L. Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health* 2014; *2*(6), pp.e323-e333.

Sacks, E., Wirth, M., Delamonica, E., Storeygard, A., Minujin, A. and Balk, D., 2009. "Delivering" on the MDGs?: Equity and maternal health in Ghana, Ethiopia and Kenya. *East African Journal of Public Health*, 5(3).

Cohen, R., Alfonso, Y., Adam, T., Kuruvilla, S., Schweitzer, J. and Bishai, D., 2014. Country progress towards the Millennium Development Goals: adjusting for socioeconomic factors reveals greater progress and new challenges. *Globalization and Health*, 10(1).

The Sustainable Development Goals report, United Nations, 2016.

https://unstats.un.org/sdgs/report/2016/

Olatubi MI, Oyediran OO, Adubi IO, and Ogidan OC, Health Care Expenditure in Nigeria and National Productivity: A Review, *South Asian Journal of Social Studies and Economics* 2018 *1(1): 1-7*

Makate, M. and Makate, C., 2017. The evolution of socioeconomic status-related inequalities in maternal health care utilization: evidence from Zimbabwe, 1994–2011. *Global Health Research and Policy*, 2(1).

Ghose, B., Feng, D., Tang, S., Yaya, S., He, Z., Udenigwe, O., Ghosh, S. and Feng, Z., 2017. Women's decision-making autonomy and utilisation of maternal healthcare services: results from the Bangladesh Demographic and Health Survey. *BMJ Open*, 7(9), p.e017142.

Mbah E., Ezeano, C. and Agada, M. Effects of rural-urban youth migration on farm families in Benue state, Nigeria. *International Journal of Agricultural Research, Innovation and Technology* 2016; 6(1), pp.14-20.

Ezeanolue E, Gbadamosi S, Olawepo J, Iwelunmor J, Sarpong D, Eze C, Ogidi A, Patel D and Onoka C. An mHealth Framework to Improve Birth Outcomes in Benue State, Nigeria: A Study Protocol. *JMIR Research Protocols* 2017; 6(5), p.e100.

Aov KF, Okon I, Njoku CG, Thaddeus KA, Iorkuaa SA, Olorundami T, and Lekam IJ, Spatial Analysis of Crime Incidents in Makurdi Metropolis, Benue State, Nigeria, Presented at the 58th *Association of Nigerian Geographers Annual Conference* 2017.

Bornstein MH, Jager J, and Putnick, DL, Sampling in Developmental Science: Situations, Shortcomings, Solutions, and Standards. *Developmental Review* 2013; *DR*, *33*(4), 357–370.

Dickson KS, Darteh EKM, and Kumi-Kyereme A, Providers of antenatal care services in Ghana: evidence from Ghana demographic and health surveys 1988–2014. *BMC health services research* 2017; *17*(1), p.203.

Bloom SS, Wypij D, and Gupta MD, Dimensions of women's autonomy and the influence on maternal health care utilization in a north Indian city. *Demography* 2001; *38*(1), pp.67-78.

Fagbamigbe AF, and Idemudia ES, Barriers to antenatal care use in Nigeria: evidences from non-users and implications for maternal health programming. *BMC pregnancy and childbirth* 2015; *15*(1), p.95.

Somefun OD, and Ibisomi L, Determinants of postnatal care non-utilization among women in Nigeria. *BMC research notes* 2016; *9*(1), p.21.

Lawn J, Cousens S, and Zupan J, 4 million neonatal deaths: When? Where? Why?. *The Lancet* 2005; *365*(9462), 891-900.

Ogunlesi TA, Ayeni VA, and Jagun EO, Effect of Socio-demographic Characteristics on Obstetric Care-seeking Behaviours and Perinatal Outcome in Sagamu, Nigeria. *Br J Med Med Res* 2016; *15*(8), pp.1-12.

Osubor KM, Fatusi AO, and Chiwuzie JC, Maternal health-seeking behavior and associated factors in a rural Nigerian community. *Maternal and child health journal* 2006; *10*(2), p.159.

Ijadunola KT, Fatusi, AO, Orji EO, Adeyemi AB, Owolabi OO, Ojofeitimi EO, Omideyi AK, and Adewuyi AA, Unavailability of essential obstetric care services in a local government area of south-west Nigeria. *Journal of health, population, and nutrition* 2007; *25*(1), p.94.

Idris SH, Sambo MN, and Ibrahim MS, Barriers to utilisation of maternal health services in a semi-urban community in northern Nigeria: The clients' perspective. *Nigerian medical journal: journal of the Nigeria Medical Association* 2013; *54*(1), p.27.

Chukwuma A, Mbachu C, Cohen J, Bossert T and McConnell M, "Once the delivery is done, they have finished": a qualitative study of perspectives on postnatal care referrals by traditional birth attendants in Ebonyi state, Nigeria. *BMC pregnancy and childbirth* 2017; *17*(1), p.429.

Dimbuene ZT, Amo-Adjei J, Amugsi D, Mumah J, Izugbara CO, and Beguy D, Women's education and utilization of maternal health services in Africa: A multi-country and socioeconomic status analysis. *Journal of biosocial science* 2018; *50*(6), pp.725-748.

Fawole OI, and Adeoye, IA, Women's status within the household as a determinant of maternal health care use in Nigeria. *African health sciences* 2015; *15*(1), pp.217-225.

ABOUT THE AUTHORS:

Saater Igyuse, Public Health Institute, Liverpool John Moores University, Liverpool, UK

Marie Claire Van-Hout, Public Health Institute, Liverpool John Moores University, Liverpool, UK

Rose Khatri, Liverpool John Moores University, Liverpool, UK