



Assessment of Factors Influencing Utilization of Maternal and Child Health Services in The Federal Capital Territory (FCT), Abuja, Nigeria

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ABSTRACT

Background: Although Nigeria has made progress in attaining the third sustainable development goal, maternal and child mortality remains a challenge to attaining universal health coverage. Utilization of maternal and child health services (MCH) is not uniform in the country, with the southern region outperforming the northern region, and within the northern region, the north central is outperforming the North West and east. Even in the north central, majority of state lag behind the federal capital territory (FCT), Abuja, in the uptake of MCH services. This study aimed to understand the determinants of maternal and child health service uptake in FCT. The evidence generated should help expand MCH services delivery in the FCT and other similar settings in Nigeria and beyond. **Methodology:** The research adopted a cross-sectional, mixed methods design in Bwari and Kuje Area Councils of Abuja, using a synthesis of the Ensor and Cooper demand and supply paradigm of health service uptake and the Andersen and Newman Behavioural Model for health service utilization. Qualitative data was obtained through Key Informant Interviews, In-Depth Interviews, and Focus group discussions with parents of under-five year children, pregnant women, health workers, program managers and community leaders. Quantitative data was collected through a household survey of women of childbearing age, using modified WHO Health Access and Use household survey questionnaire. Thematic analysis of the qualitative data was done to determine patterns relevant study objectives using Dedoose software. Quantitative analysis involved univariate descriptive analysis of respondents' socio-demographics and multivariate logistic regression to determine the predictive value and relative importance of the predisposing, enabling, and needs determinants of MCH uptake. **Result:** Factors that favoured the uptake of MCH services included service availability, affordable cost of care, accessibility and proximity of health facilities, and perceived good knowledge and capacity of health workers. No religious or cultural barrier to MCH service uptake was reported. Education and employment status were statistically significant determinants of ANC uptake. Religion, level of education, and employment were statistically significant predisposing determinants of having skilled birth attendance (SBA). Also, employment and educational status were statistically significant predisposing factors of immunization uptake. Financial barriers, poor knowledge of availability

services, previous negative experience with service utilization, poor perception on the value of MCH services were factors limiting uptake of MCH services. Conclusion: The study concludes that both demand and supply determinants of MCH services utilization were functionally demonstrated in the study area. However, the lack of health insurance scheme is a key limitation for universal coverage of MCH services in the study area. We recommend continuous improvement in health facility infrastructure and human resources capacity building by public authorities, to sustain and improve the current level of MCHs services delivery in the area. Furthermore, government should scale up the roll out of its national health insurance scheme to cover more enrollees.

Keywords: Maternal child health services, utilization, demand factors, supply factors, federal capital territory, Nigeria

BACKGROUND

Optimal access and utilization of health services are closely associated with reduced morbidity, mortality and improved health outcomes, pursuant to sustainable development.¹⁻³ Therefore, the third SDG explicitly focuses on health and includes nine broad targets and over 50 specific indicators that have been internationally agreed upon to measure health outcomes and health services provision.⁴ It targets reducing global maternal mortality ratio, ending preventable deaths of newborn and children under five years, and attaining universal health coverage. For these targets to be met, health services must be utilized by eligible populations. Utilization or uptake of health services refers to the quantity of healthcare services used by people who need them⁵ and measured in terms of percentage occupancy of health facilities, outpatient visits per provider, percentage of women receiving antenatal care (ANC) and other ways.¹ The uptake of health services is related to health outcomes for individuals, households and societies; thus, the supply of health services should be matched with commensurate utilization.⁶

Nigeria has made some progress on some health indicators, challenges still exist with its maternal and child mortality, which remains one of the highest globally. This is particularly so in the uptake of health services across and within the regions. Data from the 2018 National Demographic Health Survey (NDHS)⁷ showed that coverage rates for some Maternal and Child Health (MCH) services are higher in North-Central compared to other northern zones of the country. For example, least 66.2% of women in North-central Nigeria received ANC from a skilled provider compared to 58.5% and 53.9% in the North East and North West respectively. Vaccination coverage (DTP3) in the North Central was also higher (54.4%), compared to the North East (37.2%) and the North West (29.1%). Further, coverage rates within North Central also showed variations by states. The Federal Capital Territory Abuja (FCT), outperforms most other north-central states, recording higher uptake levels. The 2018 NDHS showed that, the proportion of women who received ANC was as high as 87.7% in the FCT and as low as 41% in Niger state, while the proportion of live births that were attended by a skilled provider was 71.7% and 30.6% respectively, in both states. Similarly, the coverage rate for children under one year who received the DPT3 vaccine was 73.5% in FCT and 38.8% in Niger state. Compared to the 67% national and 66% regional percentage of women who received antenatal care from skilled provider, Abuja recorded a considerably high proportion (87.7%) of women aged 15 – 49 years who received antenatal care.⁷ Also, when compared to the regional average of 51% deliveries assisted by a skilled provider, Abuja recorded 63% facility deliveries, with 71% of pregnant women delivering their babies by a skilled birth attendant (SBA).⁸ Thus, the FCT

presents a model, whose understanding may reveal key determinants of MCH service uptake in Nigeria. This knowledge will provide a framework of best practices which can be adoption in poor-performing states in Nigeria and beyond.

Conceptual Framework

The study adapted the Ensor and Cooper demand-side and supply-side paradigm of health service uptake⁹ and the Andersen and Newman Behavioural Model (ANBM) for health service utilization¹⁰⁻¹². The Ensor and Cooper⁹ framework posits that the supply of health services is influenced by factors derived from health system service delivery, while demand is influenced by individual, household, or community factors, such as illness identification and willingness and ability to seek appropriate health care.⁹ The model argues that uptake or otherwise of healthcare services is a function of the interaction of demand and supply factors.

ANBM framework of health service utilization visualizes the uptake of healthcare services as a function of predisposing, enabling and need factors. Predisposing factors encompass the socio-cultural characteristics of an individual before illness comprising social culture, health beliefs and demographic characteristics. Enabling factors consist of financing and logistics required in obtaining health services, such as personal or family income and wealth. Need factors are the most immediate causes of health service use, and reveals an individual's perceived or evaluated health status.

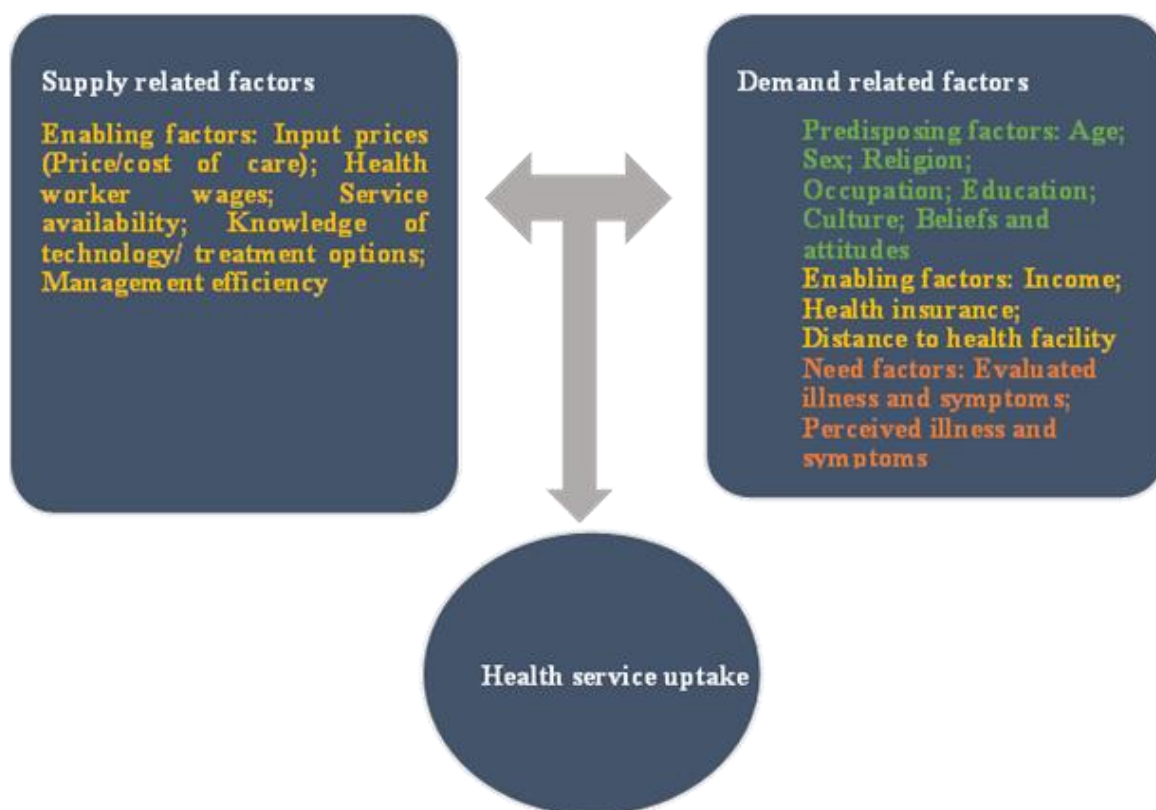


Figure 1: Modified Ensor and Cooper and ANHM frameworks of factors influencing uptake of health services

METHODS

The study was conducted in Bwari and Kuje area councils in the Federal Capital Territory (FCT), Abuja, Nigeria. Abuja has a projected population of 3,564,126 (51% male; 49% female).¹³ It is largely urban and divided into six area councils (Abaji, Abuja Municipal Area Council, Bwari, Gwagwalada, Kuje and Kwali¹⁴ and 61 political wards.¹⁵ The FCT has 763 health care service delivery facilities owned publicly and privately, of which 85%, 13% and 2% provide primary, secondary and tertiary level health care services respectively.¹⁶ The population for the study were women of childbearing age (15 – 49 years) who had a live birth within five years preceding the survey and residing in Bwari and Kuje area councils of FCT.

A cross-sectional, mixed methods study design was used. The qualitative enquiry involved focus group discussions (FGDs), key informant interviews (KIIs), and in-depth interviews (IDIs) with purposively selected respondents. The quantitative study involved a cross-sectional survey of women of childbearing age. The sample size for the quantitative study was estimated using the minimum sample size formula for cross-sectional studies¹⁷

$$N = \frac{Z^2 P (1-P)}{d^2}$$

n = minimum sample size; Z= standard normal deviate at 95% confidence interval = 1.96

P= proportion of the population who utilise MCH services = 34.9% (using a previously study¹⁸);

d = precision (corresponding to the effect size) at 95% confidence interval = 0.05

Substituting the values, n =

$$\frac{1.96^2 \times 0.349 \times (1-0.349)}{0.05^2}$$

Minimum sample size = 350

Correcting for 10% non-response rate, final sample size = n + (n X 10%)

The final minimum sample size for the survey was = 350 + 35 = **385**. One-hundred and ninety-five (195) respondents were surveyed from each of the selected area councils for this study, making up a total of 390 participants.

Participants for the quantitative study were selected via a multi-stage random sampling technique. Based on the LQAS survey of 2019, Bwari and Kuje area councils were selected as the highest and lowest performing area councils in Abuja respectively for ANC attendance, SBA, and immunization coverage. Then Dutse and Gaube wards were randomly picked from the 9 wards in Bwari and ten wards of Kuje area councils. This was followed by systematic selection of 5 settlements each from Dutse and Gaube, which have 52 and 67 settlements respectively. The appropriate sampling interval of 10 and 13 was determined for Dutse and Gaube respectively by dividing total number of settlements for each ward by five. Next, the first settlement determined by selecting a random number between one and the sampling interval (SI) for each ward, while subsequent settlements were selected by consecutively adding the SI to the previous cumulative number. Finally, household heads in each settlement were provided by the community leader after which households were randomly selected by balloting. Only one

eligible respondent was surveyed per household. On completion of the survey in one house, the interviewer exited that house and continued to the next random house or street. This was repeated until the calculated sample size was arrived at.

The qualitative data was obtained via FGDs, KIIs, and IDIs using semi-structured interview guides consisting of three sections; supply determinants of health service uptake, demand determinants of health service uptake, and recommendations to improve MCH uptake. Respondents for qualitative discussions and interviews were purposively selected based on target characteristics, role, and designation. The respondents included program managers at state and area council level, health workers, traditional leaders, religious leaders, pregnant women, and parents of children under-five years. Five FGDs, each having seven participants, were conducted with mothers and fathers of children under-five, pregnant women, and health workers in the two selected area councils. Five IDIs were conducted with a father of child under-five, a mother of child under-five, a pregnant woman, one community leader, and one religious' leader. Five KIIs were also conducted with immunization program managers and health workers from the two area councils, and the state immunization program manager. Community level respondents were identified with the help of community leaders and the local health workers or program managers in the study area councils. Health workers and program managers were identified with the help of the State Primary Health Care Development Board (SPHCDB).

A close-ended questionnaire, adapted from the WHO Health Access and Use household survey questionnaire 19 was used to generate quantitative data for this study. The questionnaire was developed digitally using the Open Data Collection Kit application (ODK) to eliminate the tedium associated with paper-based surveys. It had five sections comprising respondent demographics, access to health services, general information on utilization of health services, utilisation of maternal health services, and utilisation of child health services.

All interviews and discussions were audio-recorded and transcribed verbatim. Interviews conducted in Hausa language were transcribed by data assistants who were familiar with the language and coded using the Dedoose software in relation to the study objectives and the conceptual framework. Similar codes were grouped into themes to aid interpretation of findings. Exemplar statements were anonymously utilised for illustrative purposes. Quantitative data was exported from the ODK server into the statistical package for social sciences (SPSS) software version 26 for analysis. Univariate descriptive analysis of respondents' socio-demographic information was undertaken to yield frequency tables, proportions and percentages. The predictor variables were the predisposing, enabling and need factors and Chi-square analysis was used to examine the relationship between the outcome and predictor variables. Multivariate logistic regression model was used to determine the predictive value of predictor variables on the primary outcome, using crude odds ratios at 95% confidence interval.

Ethical clearance for this research was obtained from the FCT Administration Health Research Ethics Committee (HREC), with approval number is: FHREC/2021/01/44/07-05-21. Informed consent was obtained using standard oral consent scripts and documented for all study participants, and respondents were at liberty to withdraw at any point without consequences or penalties. Protection of participants from harm was assured and permission to record

qualitative interviews was also elicited. The confidentiality of participants' responses was ensured by securing study data on the ODK server and audio recordings and transcripts stored in password-protected laptops and mobile phones.

RESULTS

Five KIIs, five IDIs and five FGDs involving 45 respondents were conducted, and the ages of participants ranged from 25 – 63 years with a mean age of 37 ± 10.6 years. The majority were community members (53%) and females (53%). Fifty six percent of participants attained graduate level education (see table 1).

Table 1: Socio-demographic characteristics of qualitative study participants

Participants characteristics	Number of respondents (n=45)	Percentage
Participant type		
Community members	24	53%
Religious leader	1	2%
Community leader	1	2%
Program manager	3	7%
Health worker	16	36%
Sex		
Male	21	47%
Female	24	53%
Highest level education		
None	0	0%
Primary	2	4%
Secondary	16	36%
Graduate	25	56%
Postgraduate	2	4%

All study participants confirmed that the provision of ANC, SBA, and immunization services were readily available in the health facilities closes to them. However, pregnant women and mothers of children under-five indicated that alternate sources of these services were available at patent medical stores, and home deliveries provided by traditional birth attendants (TBA). Reasons for assessing services from these other sources, particularly for deliveries included personal preferences, not being able to make it to the health facility on time, and negative perception of previous experience with health workers.

There were differing opinions on the cost and affordability of MCH services available in health facilities. Fathers of under-five years children and health workers in Bwari area council believed the input prices for MCH services were affordable by the community members.

“Maternal health services are very affordable. For example, ACT which they sell at 800 Naira outside; we sell at 400 or 500 in the PHC facilities. We are satisfied with the cost”. – Bwari health worker

However, nursing mothers and pregnant women were of the opinion that the cost of ANC and SBA services at the public health facility was a barrier to accessing services.

“Patronising outlets like pharmacy is cheaper because if my baby is sick and I don’t have enough money to afford the hospital services, the chemist can combine drugs even as low as N500 for my baby and she will be fine but, in the hospital, you will be asked to buy card, run tests because they won’t give you drugs without testing you” – Mothers of under-five child in FGD

Respondents stated that health facilities were located closed to the community and could be accessed by foot, tricycle, or motorcycle. This facilitated high uptake of MCH services.

“In line with how we are taught, in this community, facilities are within 2km distance. So the highest you will spend is maybe 100 – 500 Naira for the transportation. You see, some even trek it and use the opportunity to gist with each other while on the road. .” – Program Manager, Kuje

Regarding provider competencies, program managers said the knowledge and skills of health workers in providing MCH and other health services were impressive, especially in the public sector, and corroborated by respondents of KIIs and FGDs as exemplified below:

“The reason we go to the hospital is because we think that we will be able to access qualified doctors and nurses, but we are pleading with them to reduce the prices of drugs and services rendered.” - FGD with pregnant women participant

Health workers, pregnant women, and mothers of children under-five years agreed that there were no cultural or religious hinderances to health care services. Instead, religious and traditional leaders encouraged their community and congregation members to visit the health facilities to receive proper care. In their words;

“The traditional and religious leaders encourage us to go to the hospital for treatment when needed. They do not stop anybody.”- Participant of FGD with mother of under-five children

“The pastors are trying. In my church there are families that are not financially strong. When the women want to give birth or any of the children is sick, the pastor raises money on their behalf for their medical needs.” – IDI with pregnant woman

Poor coverage of health insurance negatively influenced the uptake of MCH services. Although health workers acknowledged the availability of insurance services in their facilities, none of the community level respondents mentioned being covered by any form of health insurance as reported by this respondent:

“We do not have any health insurance, because we are not government workers, as it is only the government workers that have access to National Health Insurance Scheme.” – Participant of FGD with fathers of children under-five years

A reason cited for the poor coverage of the health insurance was late registration and inadequate sensitization of community members.

Overall, maternal and child health services were available and spatially close to the consumers, and provided by trained health care workers. There were no cultural and religious barriers to services utilization. However, although there appeared to be no consensus on affordability of

services, they judged to be reasonable, and health insurance coverage was virtually nonexistent.

A total of 390 women were surveyed. Majority were married (67.7%), Christians (50.8%), and educated (60.7%). Only 25 (6.4%) respondents were employed in the formal sector while 53.2% of the respondents were unemployed as shown in Table 2.

Table 2: Socio-demographics Characteristics of Survey Respondents

Variables	Frequency n= (390)	Percentage N = (%)	Mean $\pm$ SD
Age			
16-30 years	211	54.10	29.5 $\pm$ 6.25
31 – 46 years	179	45.90	
Marital status			
Divorced	27	6.90	
Married	264	67.70	
Single	33	8.50	
Widowed	66	16.90	
Religion			
Christianity	198	50.80	
Islam	185	47.40	
Others	1	0.30	
Traditional	6	1.50	
Level of Education			
Graduate	29	7.40	
None	153	39.20	
Others	5	1.40	
Post-Graduate	15	3.80	
Primary	90	23.10	
Secondary	98	25.10	
Employment status			
Employed (formal Sector)	25	6.40	
Employed (informal Sector)	19	4.90	
Others	8	2.10	
Self-Employed	158	30.20	
Student	12	3.20	
Unemployed	168	53.20	

On factors influencing MCH uptake in the study population, Among the 221 women who attended ANC, a higher proportion 145 (65.6%) completed more than four ANC visits in their last pregnancy, while 76 (34.3%) completed less than four ANC visits. Education and employment status were statistically significant predisposing determinants of ANC uptake. Women who had completed secondary level of education and who were unemployed were more likely to attend four ANC visits. Women's perception of the need of ANC importance was a significant determinant ANC uptake. Women who perceived ANC to be important (41.6%) utilized ANC service 1.7times more than women who did not perceive it to be important as depicted in Table 3.

Table 3: Factors influencing ANC uptake instudy population

Variables	Less than four visits (n=76)	More than four ANC visits (n=145)	Total	P-value
Predisposing factors				
Age				0.006
16-30	36(16.20%)	69(31.20%)	105(47.40%)	
31 – 46	40(18.20%)	76(34.40%)	116(52.60%)	
Religion				0.372
Christianity	51(23.20%)	101(45.60%)	152(68.70%)	
Islam	24(10.80%)	44(19.90%)	68(30.70%)	
Others	1(0.60%)	0	1(0.60%)	
Educational level				0.017*
Secondary	28(12.60%)	53(23.90%)	81(36.60%)	
Primary	23(10.50%)	39(17.60%)	62(28.10%)	
None	18(8.10%)	16(7.30%)	34(15.40%)	
Graduate	4(1.80%)	21(9.50%)	25(11.30%)	
Post-graduate	1(0.50%)	13(5.90%)	14(6.40%)	
Others	2(0.90%)	3(1.30%)	5(2.20%)	
Employment status				0.001*
Unemployed	38(17.30%)	106(47.90%)	144(65.20%)	
Employed	36(16.20%)	39(17.60%)	77(33.80%)	
Enabling factors				
Health facility distance				0.656
Not accessible	50(22.60%)	91(41.20%)	141(63.80%)	
accessible	26(11.80%)	54(24.40%)	80(36.20%)	
Transportation cost				0.076
Not affordable	60(27.20%)	98(44.30%)	158(71.50%)	
Affordable	16(7.20%)	47(21.30%)	63(28.50%)	
Health facility readiness				0.538
No	71(32.20%)	132(59.70%)	203(91.90%)	
Yes	5(2.20%)	13(5.90%)	18(8.10%)	
Health Insurance				0.433
Not insured	74(33.50%)	138(62.40%)	212(95.90%)	
Insured	2(0.90%)	7(3.10%)	9(4.10%)	
Skilled health workers and				0.224

provision of quality care				
No	73(33.10%)	133(60.2%)	206(93.30%)	
Yes	3(1.30%)	12(5.40%)	15(6.70%)	
Need factors				
Perceived need				0.001*
No perceived need	54(24.6%)	53(23.90%)	107(48.50%)	
Perceived need	22(9.9%)	92(41.60%)	114(51.50%)	
Evaluated need				0.497
Not diagnosed	67(33.30%)	132(59.80%)	199(90.10%)	
Diagnosed	9(4.10%)	13(5.90%)	22(9.90%)	

Use of SBA data showed that 52% of respondents had their last delivery at a health facility, 46% delivered at home. Religion, level of education, and employment were statistically significant predisposing factors of SBA use. Also, distance to health facility and evaluated need for SBA were statistically significant. SBA uptake was two times higher in women who resided in communities where health facility distances were accessible. Additionally, uptake was six times higher among women who received advice from health professionals on SBA than among those who did not receive any advice, as shown in see table 4.

Table 4: Factors influencing SBA uptake in study participants

Variables	No SBA (n=182)	SBA (n=204)	Total	P-value
Predisposing factors				
Age				0.374
16-30	93(24.10%)	112(29.10%)	205(53.10%)	
31 – 46	89(23.10%)	92(23.80%)	181(46.90%)	
Religion				0.001*
Christianity	50(12.90%)	147(38.20%)	197(51.10%)	
Islam	125(32.40%)	57(14.70%)	182(47.10%)	
Others	7(1.80%)	0	7(1.80%)	
Educational level				0.001*
None	130(33.60%)	21(5.50%)	151(39.10%)	
Primary	32(8.20%)	57(14.70%)	89(22.90%)	
Secondary	15(3.80%)	82(21.40%)	97(25.20%)	
Graduate	4(1.10%)	25(6.50%)	29(7.60%)	
Post-graduate	1(0.30%)	14(3.60%)	15(3.90%)	
Others	0	5(1.30%)	5(1.30%)	
Employment status				0.001*
Employed	32(8.30%)	130(33.60%)	162(41.90%)	
Unemployed	150(38.90%)	74(19.20%)	224(58.10%)	
Enabling factors				

Health facility distance				0.038*
Not accessible	126(32.60%)	68(17.60%)	194(49.90%)	
Accessible	56(14.50%)	136(35.20%)	116(31.60%)	
Transportation cost				0.448
Not Affordable	142(38.50%)	151(38.60%)	293(75.90%)	
Affordable	40(11.20%)	53(11.60%)	93(24.10%)	
Health facility readiness				0.662
No	166(43.04%)	180(46.60%)	346(88.70%)	
Yes	16(4.10%)	24(6.20%)	40(11.30%)	
Health insurance				0.778
Not insured	174(45.1%)	188(48.70%)	362(93.80%)	
Insured	8 (2.10%)	16 (4.10%)	24(6.20%)	
Skilled health workers and provision of quality care				0.662
No	165(42.70%)	26(6.70%)	191(49.50%)	
Yes	17(4.40%)	178(46.10%)	195(50.50%)	
Need factors				
Perceived need for SBA				0.641
No perceived Need	164(42.50%)	28(7.20%)	192(49.70%)	
Perceived Need	18(4.70%)	176(45.60%)	194(50.30%)	
Evaluated need for SBA				0.050*
Not recommended	165(42.70%)	27(6.90%)	191(49.50%)	
Recommended	17(4.40%)	177(45.90%)	194(50.30%)	

The uptake of immunization was low among the study population with only 138 (35%) of women reporting that their children had received penta 3. Employment, education, health insurance status and advice of health workers were statistically significant predictors of immunization uptake. Women with any level of education utilized immunization services more than women who had no education. Transportation cost and service availability were statistically significant enabling factors, as can be seen in Table 5.

Table 5 Determinants of immunization services uptake among Respondents

Variables	No penta3 (n=34)	Penta3 received (n=138)	Total	P Value
Predisposing factors				
Age				0.176
16-30	14(8.10%)	50(29.10%)	64(37.30%)	
31-46	20(11.60%)	88(51.10%)	108(62.70%)	
Religion				0.113
Christianity	28(16.40%)	88(51.10%)	116 (67.50%)	
Islam	6(3.40%)	49 (28.50%)	55 (31.90%)	
Others	0	1 (0.60%)	1 (0.60%)	
Education level				0.000*
None	1 (0.60%)	22 (12.70%)	23(13.30%)	
Primary	7 (4.20%)	43 (24.90%)	50(29.10%)	
Secondary	16 (9.30%)	49 (28.50%)	65(37.80%)	
Graduate	7 (4.20%)	11 (6.30%)	18(10.50%)	
Post-graduate	2 (1.20%)	11 (6.30%)	13(7.50%)	
Others	1 (0.60%)	2 (1.20%)	3(1.80%)	
Employment				0.035*
Employed	16(9.40%)	39(22.60%)	55(32.00%)	
Unemployed	18(10.40%)	99(57.60%)	117(68.00%)	
Enabling factors				
Health facility distance				0.160
Not accessible	32(18.60%)	86(49.90%)	118(68.50%)	
Accessible	2(1.20%)	52(30.30%)	54(31.50%)	
Transportation cost				0.046*
No	27(15.60%)	89(51.70%)	116(67.30%)	
Yes	7(4.20%)	49(28.50%)	56(32.70%)	
Service availability				0.034*
Vaccine and vaccinator absent	28(16.30%)	11(6.30%)	39(22.70%)	
Vaccine and vaccinator present	6(3.40%)	127(73.80%)	133(77.30%)	
Health insurance				0.043*
Not insured	33(19.20%)	138(80.20%)	171(99.40%)	
Insured	1(0.60%)	0	1(0.60%)	
Need factors				
Perceived need for and importance of vaccination				0.886
No perceived Need	15(8.70%)	59(84.20%)	74(42.90%)	

Perceived Need	19(11.20%)	79(45.90%)	98(57.10%)	
Evaluated need				0.000*
Not recommended	4(2.40%)	0	4(2.40%)	
Recommended	30(17.40%)	138(80.20%)	168(97.60%)	

The findings in general demonstrate that education, employment status, services availability and perceived need for care were statistically significant determinants of MCH services utilization in the study area. Services cost, religious affiliation and health professional advices also played significant roles in services uptake among study participants. On the other hand, inability to afford cost of care, lack of knowledge on where to obtain care and previous negative experience were significant reasons for non-utilization of MCH services.

DISCUSSION

Education level and women's perception of the importance of ANC were significant predictors of ANC uptake found in this research. This finding aligns with the findings from a study in southern Nigeria, which also recorded high uptake of ANC services.⁷ Alenoghena et al., have also reported educational status to be a significant predictor of ANC services uptake in Edo state, in southern Nigeria.²⁰ Our findings concur with similar study from the north western state of Kano, where low education levels was associated with poor utilization of MCH services, as most school age girls are given out into early marriage and unable to attain or complete primary level of education.²¹ In the Kano study, most of the participants had multiple parities and often resorted to the easily available, cheaper traditional birth attendants (TBAs) within rural communities. Similarly, studies in Ethiopia found formal educational status of women as a significant factor for ANC uptake.²² The study also revealed that unemployed women had more ANC visits than those who are employed. This is similar to ANC usage in southern Nigeria where ANC is relatively higher than in other parts of the country.^{23,24} This may be because non-working women have more time to seek health care. On the other hand, women who are employed have more uptake of SBA than those who are unemployed. This is because women who are gainfully employed often have the financial ability to access skilled attendance during delivery than those who are not employed.^{26,27} Our research further demonstrated that women who believed ANC was beneficial for both mother and child utilized more MCH services. Consequently, women who had a positive perception towards ANC and safety of SBA were more knowledgeable about pregnancy-related complications, commenced ANC visits early during their pregnancy, completed up to four ANC visits, and deliver in a health facility. Perceived need and prior knowledge of the importance of ANC has been shown to be an important need factor that determine uptake of MCH services.^{11,25}

Educational level again, is a significant predisposing factor determining uptake of immunization services in this study. This agrees with the study by WHO UHC,²⁸ that showed rates of MCH services uptake (ANC, SBA, CS and vaccination) to be considerably higher in women who attended primary, secondary, or tertiary education than in women with no formal education. Furthermore, the found that recommendation by health workers was a significant need factor influencing immunization uptake. A survey on modern health services utilization in Ethiopia has also showed the positive role of health worker counsel in enhances utilization of MCH services.²⁴

Among women who did utilize ANC services, input prices, knowledge of service provision centres, previous experience, and opportunity costs of time and transportation significantly hindered uptake. This finding corroborates previously documented research on barriers to ANC uptake in Nigeria where cost of care, negative experience with health care providers, and lack of awareness of ANC were major reasons for non-uptake of ANC services.^{20,21,29,30} A recent study on the determinants of uptake of maternal health service uptake in Burundi and Northern Uganda reported similar reasons for non-utilization of ANC and SBA services.² Whilst none of the factors evaluated for non-uptake of SBA services were statistically significant, reasons such as inability to afford cost of health facility delivery was cited as reason for non-uptake. This was not the case in the study of Ibebuikwe et al., in Calabar,³¹ who reported that long distance to health facility, satisfaction with service, and inadequate referral services significantly hindered uptake of MCH services. Findings from this research also differed from those of Chi et al² which cited lack of personnel, financial constraints, unavailability of medicines, unfriendly treatment by medical personnel at health facilities and time constraints as statistically significant reasons for non-uptake of ANC and SBA services. In this study, rather than the constraints reported by Chi et al, the reasons for non-utilization of ANC services included transportation cost, inability to afford cost of ANC, poor knowledge levels on facilities providing ANC services, and negative previous experience.

In agreement with the factors associated with low immunization coverage in northern Nigeria as reported in the 2018 NDHS,⁷ we found poor knowledge of the importance of vaccines, lack of knowledge on vaccination centres and immunization schedules, as also significant variables influencing the non-uptake of immunization. This further aligns with a study conducted in Kenya where immunization uptake was also low, with unavailability of vaccines, cost and absence of vaccinators as reasons for non-utilization of vaccination services in Nairobi.³²

CONCLUSION

We conclude that both demand and supply determinants of MCH services utilization were functionally discovered in the study area. MCH services were availability, at reasonable cost and delivered by perceived knowledgeable and skills health workers. Proximity of health facilities to community members, absence of cultural or religious barriers, the positive perception of value of MCH services and education were significant demand determinants of service uptake, in this study. However, the lack of health insurance scheme remains a key concern, with dire implications for universal coverage of MCH services in the study location.

We recommend continuous improvement in health facility infrastructure and human resources capacity building and supportive supervision of health workers to sustain and improve the current level of MCHs services in the area. Also, the government should rapidly scale up the national health insurance scheme to all areas in Abuja, to expand access to MCH services. Finally, sustenance of advocacy and collaborations between government, community and religious leaders for the continuous sensitization of their members on the benefits of utilizing MCH services in the FCT.

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