Utilization of Maternal Health Services and Enhancement Strategies among Women of Reproductive Age in Benue State, Nigeria

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Abstract

Background: The utilisation of maternal health services (MHS) such as antenatal care, skilled delivery and postnatal careis a decisive determinant of maternal and newborn survival, yet uptake among women of reproductive age in Nigeria remains uneven and shaped by individual, economic and socio-cultural factors. This study assessed the extent of MHS utilisation among women of reproductive age in Benue State, north-central Nigeria, examined variation across the state's geographical zones, and identified strategies to enhance service uptake.

Methods: A descriptive survey design was used. A multistage sampling procedure across the three senatorial zones of Benue State yielded 400 women of reproductive age (15–49 years), who completed a validated structured questionnaire (Cronbach's $\alpha = 0.83$). Data were analysed with descriptive statistics and the chi-square test at $p < 0.05$, informed by Andersen's behavioural model of healthcare utilisation and the Health Belief Model.

Results: Women of reproductive age utilised maternal health services to a high extent overall ($\bar{x} = 2.61$), with antenatal care and immunisation the most-used services, though utilisation was constrained by perceptions of poor staff attitude and inadequate equipment. Strategies to enhance uptake were strongly endorsed (aggregate $\bar{x} = 3.40$), foremost among them regular community engagement by health workers, radio and television promotion of maternal-health benefits, provider responsiveness to women's concerns, and continuing staff training. Utilisation differed significantly across the three geographical zones ($\chi^2 = 125.245$; $df = 4$; $p < 0.05$).

Conclusion: Although maternal health services are utilised to a high extent in Benue State, uptake is uneven across zones and shaped by provider attitude, equipment and awareness. Community engagement, mass-media promotion, provider training and improved access are prioritised to strengthen utilisation.

Keywords: maternal health services; utilization; enhancement strategies; women of reproductive age; health-seeking behaviour; Nigeria

1. Introduction

The reduction of maternal mortality and morbidity is a key public health objective and is included in Sustainable Development Goal 3 (SDG 3), which aims for a global maternal mortality ratio of less than 70 per 100,000 live births by 2030. The burden is greatest in Sub-Saharan Africa with maternal death rate of 525 per 100,000 live births and Nigeria accounts for a disproportionately large share of preventable maternal deaths with estimated lifetime risk of maternal death of approximately one in thirteen women (WHO, 2020, 2022). Most maternal deaths are preventable, and the use of maternal health services is a critical determinant of whether or not a maternal death can be prevented.

Maternal health care defined as antenatal attendance, delivery by a skilled birth attendant and post natal care is crucial to reducing morbidity of pregnancy and improving birth outcomes (Igbokwe & Isabu, 2023). But utilisation is not just a matter of the availability of services. It is influenced by individual and cultural expectations, constraints and settings, individual, household, community and policy level factors (Babalola & Fatusi, 2020). Sociodemographic factors like age, parity, education, occupation, income and place of residence have been found to affect women's access and use of maternal health services time and time again (Pandey & Singh, 2019; Onononokpono & Odimegwu, 2021).

Many women in Nigeria do not attend health facilities for delivery but opt for home delivery with unskilled birth attendants for various reasons such as transportation, distance to health facility, preference for traditional birth attendants, and perceived attitude of health-care providers (Onah, Ikeako & Iloabachie, 2018; Olayinka, Achi, Alade & Chiedu, 2019). The level of utilisation and the factors that affect it are closely linked to maternal morbidity and mortality and, therefore, have direct public-health implications in understanding how to increase the level of utilisation.

Benue State, which is predominantly rural and agrarian in the north-central part of Nigeria, is a good illustration. While access to maternal health services has been the focus of a number of policies and programmes, there has been little research that looks in depth at the extent of women's use of maternal health services in the state, the differences in use across the geographical zones of the state, and what women themselves think is most likely to increase uptake. This study aims to answer those questions.

1.1 Objectives of the study

The study assessed the utilisation of maternal health services and enhancement strategies among women of reproductive age in Benue State, Nigeria. Specifically, it examined: (i) the extent to which women of reproductive age utilise maternal health services; and (ii) the strategies that could be adopted to enhance the utilisation of maternal health services among women of childbearing age in the state.

The following null hypothesis was tested at the 0.05 significance level:

$H0_1$: The level of maternal health service utilisation does not differ significantly across the three geographical zones of Benue State.

2. Theoretical Framework and Related Literature

This study is based on two complementary frameworks. One of the most popular models of healthcare utilization for understanding the utilization process of individuals and families is Andersen's (1968) behavioural model. It suggests that factors influencing utilisation can be divided into three categories: predisposing factors (demographic and social-structural factors, including age, parity, education and occupation), enabling factors (family and community resources that facilitate service use, including income, health insurance, place of residence, transport, and availability of personnel and facilities) and need factors (perceived need for care and professionally assessed need). The model offers a direct interpretive lens for utilisation data as the barriers women report (cost, distance, equipment and provider attitude) map onto the enabling and predisposing dimensions.

It is supplemented by the Health Belief Model (Rosenstock & Kegels, 1950) which states that the probability of a person taking a health action is related to the susceptibility and severity of the condition, and the benefits and barriers of the action. In the maternal context, seeking prenatal, birth or postpartum care is a reflection of a woman's assessment of risks associated with pregnancy and childbirth, as well as the perceived benefits and availability of formal care and the cost of that care. Both models suggest that utilisation is a function of enabling resources and predisposing characteristics and health beliefs, and both models provide a rationale for focusing the study on both levels of utilisation and the strategies (awareness, community engagement and improved access) that could influence and enhance utilisation.

In practice, the evidence from Nigeria and similar contexts is variable. There are reports of high uptake of antenatal care and immunisation, and low uptake of skilled delivery (Awadalla, Kamel, Malifouz & Refaat, cited in the source thesis; Ezemenahi, Modebe, Njoku & Obi-Nwosu, 2024), and reports of persistently inadequate uptake of childbirth services in certain states (Moore, Alex-George & Moore, cited in the source thesis). Community-based participatory approaches, health education and mobilisation have been associated with strengthened maternal-health service use in Nigeria and Malawi (Datiko, Bune, Birrie, Kea & Steege, 2019; Samuel, Atuhaire, Namuli, Malin & Elden, 2022), lending support to the enhancement strategies examined here.

The determinants of utilisation found in the broader literature align with the two frameworks. Education has been a recurring theme as a strong predisposing factor: better educated women are more likely to value skilled care, and attend prenatal and delivery services (Pandey & Singh, 2019). Economic status and place of residence function as enabling factors; cost of care and transport and distance to the nearest facility are consistently reported as barriers, among rural and low-income women (Awoyemi, Obayelu & Opaluwa, 2018; Gazali, Muktar & Gana, 2022). Attitudinal and belief factors (confidence in effectiveness of formal care and perceived quality of provider interaction) influence women's likelihood of seeking the full package of care, and negative provider attitudes have been identified in some Nigerian studies as a barrier to postnatal-service use (Olayinka et al., 2019). The Nigerian data also shows that community and state-level factors explain a substantial proportion of the variation in utilisation, above and beyond the individual and household-level factors (Babalola & Fatusi, 2020; Onononokpono & Odimegwu, 2021), which further highlights the importance of examining the zonal variation.

From the strategy perspective, the literature refers to both demand and supply measures. Increased utilisation has been linked to awareness-raising using mass media and community health education, community health workers to reach out, referral and transport systems, and improvements in the interpersonal quality of care (Datiko et al., 2019; Samuel et al., 2022). More recent studies have pointed to the potential of technology-based interventions (such as maternal telehealth) and the role of trained traditional or village birth attendants as a potential pathway to facility-based care, especially in remote rural settings. These strands guided the analysis of the enhancement-strategy items in this study.

3. Methods

3.1 Study design and setting

A descriptive survey design was adopted because it permits systematic description of the present state of the phenomenon under study and supports generalisation from a sample. The study was conducted in Benue State, in Nigeria's north-central region, which comprises twenty-three local government areas and a predominantly rural population organised into three senatorial (geographical) zones.

3.2 Population, sample and sampling

The target population was women of childbearing age (15–49 years) attending antenatal and postnatal clinics at public health facilities in Benue State. Using Taro Yamane's (1967) formula at a 0.05 level of significance, a sample of 400 women of reproductive age was determined. A multistage procedure was applied: the state was first stratified into its three senatorial zones; two local government areas were then selected from each zone by simple random (hat-draw) sampling - Katsina-Ala and Vandeikya (Zone A), Gboko and Makurdi (Zone B), and Ogbadibo and Otukpo (Zone C); facilities were selected within these areas; and women attending antenatal and postnatal clinics were sampled conveniently until the required number was reached.

3.3 Instrument, validity and reliability

Data were collected with the “Maternal Health Provision, Utilization and Enhancement Strategies in Benue State” (MHPUESBS) questionnaire, a researcher-developed structured instrument. The sections relevant to this analysis captured respondents' socio-demographic characteristics, the extent of maternal health service utilisation (four-point Likert scale, Very High Extent = 4 to Very Low Extent = 1; benchmark 2.50), and enhancement strategies (four-point agreement scale). Face and content validity were established by four experts in health education, nursing, medicine and maternal health. Internal consistency, assessed in a pilot of thirty comparable women in Gwer-West LGA, yielded a Cronbach's alpha of 0.83, indicating a reliable instrument.

3.4 Data collection and analysis

Four hundred questionnaires were administered at the selected clinics on designated clinic days, and all 400 (100%) were retrieved. Data were analysed using SPSS version 21. Socio-demographic characteristics were summarised with frequencies and percentages; utilisation and enhancement-strategy items were analysed using mean ± standard deviation, with a mean of 2.50 or above indicating a high extent (or agreement). The null hypothesis was tested using the chi-square test at $p < 0.05$. Ethical approval was obtained from the Lincoln University College Ethics Committee and the Benue State Research Ethical Review Committee; participation was voluntary, confidentiality was protected through the use of codes, and verbal informed consent was obtained from each respondent.

4. Results

4.1 Socio-demographic characteristics of respondents

The respondents were predominantly of active childbearing age: 54.8% were aged 31–40 years, with a mean age of 32 years (SD = ±6.76). Most were Christian (78.5%) and married (44.3%). In terms of education, 39.8% completed secondary school, 29.5% primary and 18.3% NCE/OND, indicating a comparatively literate population. Most respondents were self-employed (41.8%), and the largest income group (40.0%) earned N16,000–N20,000 monthly. Seventy per cent resided in urban areas, 53.5% had given birth one to three times, and 44.3% had one or two children. Table 1 summarises selected characteristics.

Table 1. Selected socio-demographic characteristics of respondents (N = 400)

Variable	Category	n (%)
Age (years)	31–40 (modal)	219 (54.8)
Religion	Christianity	314 (78.5)
Marital status	Married	177 (44.3)
Educational attainment	Secondary (modal)	159 (39.8)
Occupation	Self-employed	167 (41.8)
Monthly income (N)	16,000–20,000 (modal)	160 (40.0)

Variable	Category	n (%)
Location	Urban	280 (70.0)
Parity	1–3 times	214 (53.5)
Number of children	1–2	177 (44.3)

Note. Modal categories shown for age, education and income.

Interpreted through Andersen's (1968) predisposing and enabling dimensions, this profile is broadly favourable to utilisation on some counts and constraining on others. The concentration of respondents in active childbearing ages and their comparatively high literacy are predisposing factors associated in the literature with greater use of maternal services (Pandey & Singh, 2019). At the same time, the modal monthly income of N16,000–N20,000 signals limited economic capacity, an enabling constraint that may restrict the ability of many women to meet the direct and indirect costs of care. The predominantly urban residence of the sample reflects the clinic-based recruitment and should be borne in mind when interpreting utilisation, since access barriers are typically more acute among rural women.

4.2 Extent of maternal health service utilisation

Table 2. Extent to which women of childbearing age utilise maternal health services (N = 400)

S/N	Item	Mean	SD	Remark
1	I attend antenatal care when I am pregnant	1.81	±0.76	Low extent
2	I attend the facility for prenatal care because of adequate antenatal equipment/facilities	2.97	±0.88	High extent
3	I avoid postnatal care services because medical staff treat patients poorly	3.21	±0.98	High extent
4	I use local facilities because they offer immunisation treatments	2.73	±0.99	High extent
5	I do not use maternal health services because equipment cannot meet community needs	2.87	±0.91	High extent
6	Pregnancy and childbirth-related medical technology is operational	2.09	±1.06	Low extent

S/N	Item	Mean	SD	Remark
	Aggregate Mean ± SD	**2.61**	**±0.93**	**High extent**
	Criterion Mean	2.50		

Note. Criterion mean = 2.50.

Table 2 shows that women of reproductive age utilise maternal health services to a high extent overall (aggregate $\bar{x}$ = 2.61; SD = ±0.93). Utilisation was driven by the perceived adequacy of antenatal equipment ($\bar{x}$ = 2.97) and by the availability of immunisation services ($\bar{x}$ = 2.73). The high scores on items 21 and 23, however, reveal important barriers: women reported avoiding postnatal care because of poor staff attitude ($\bar{x}$ = 3.21) and declining to use services perceived as inadequately equipped for community needs ($\bar{x}$ = 2.87). The low mean for consistent antenatal attendance ($\bar{x}$ = 1.81) and for the perceived operability of maternal technology ($\bar{x}$ = 2.09) suggests that, although aggregate utilisation is high, it is neither uniform nor unconditional, it is tempered by provider attitude, equipment adequacy and awareness.

4.3 Strategies to enhance maternal health service utilisation

Table 3. Strategies adopted to enhance maternal health service utilisation (N = 400)

S/N	Strategy	Mean	SD	Remark
1	Regular community engagement by health workers on antenatal services	3.67	±0.61	Agreed
2	Promotion via radio and television of the benefits of maternal health services	3.50	±0.57	Agreed
3	Providers attending to women's and families' concerns before, during and after childbirth	3.71	±0.49	Agreed
4	Regular update training of health workers on maternal health service provision	3.66	±0.47	Agreed
5	Prompt detection and treatment of early warning signs during and up to a year post-pregnancy	3.01	±0.36	Agreed
6	Expansion of access to maternal telehealth services	3.02	±0.70	Agreed
7	Provision of ambulance services for referral to general/tertiary hospitals	3.52	±0.67	Agreed

S/N	Strategy	Mean	SD	Remark
8	Strengthening of village birth attendants to encourage service utilisation	3.14	±0.39	Agreed
	Aggregate Mean ± SD	**3.40**	**±0.40**	**Agreed**
	Criterion Mean	2.50		

Note. Criterion mean = 2.50; all items met the agreement benchmark.

As Table 3 shows, respondents endorsed all eight enhancement strategies, with an aggregate mean of 3.40 (SD = ±0.40). The most strongly supported were provider responsiveness to women's concerns before, during and after childbirth ($\bar{x}$ = 3.71), regular community engagement by health workers on antenatal services ($\bar{x}$ = 3.67), continuing update training of health workers ($\bar{x}$ = 3.66), ambulance provision for referrals ($\bar{x}$ = 3.52) and mass-media promotion of maternal-health benefits ($\bar{x}$ = 3.50). Expansion of telehealth access ($\bar{x}$ = 3.02) and strengthening of village birth attendants ($\bar{x}$ = 3.14) were also endorsed. Collectively, the pattern points to a strategy mix that combines demand-side awareness and community engagement with supply-side provider quality and referral support.

4.4 Zonal variation in utilisation (Hypothesis 1)

Table 4. Chi-square test of variation in maternal health service utilisation across zones

Service utilisation	Zone A	Zone B	Zone C	χ^2	df	p
Antenatal care use	105 (26.3%)	15 (3.8%)	26 (6.5%)	125.245	4	<0.05
Delivery care use	44 (11.0%)	141 (35.3%)	36 (9.0%)			
Postnatal care use	5 (1.5%)	20 (5.0%)	7 (1.8%)			

Note. Significant at $p < 0.05$.

The chi-square test returned a value of 125.245 (df = 4; $p < 0.05$), leading to rejection of the null hypothesis. The three geographical zones therefore differ significantly in the level of maternal health service utilisation. The pattern was service-specific: antenatal-care use was highest in Zone A (26.3%), whereas delivery-care use was concentrated in Zone B (35.3%), and postnatal-

care use was low across all zones. This distribution indicates that no single zone showed uniformly high utilisation and that zonal characteristics shape which services women use.

5. Discussion

The high level of maternal health service utilisation by women of reproductive age in Benue State, primarily for antenatal care and immunisation, aligns with the findings of studies that reported high attendance rates for maternal health services in Nigeria and similar settings (Ezemenahi, Modebe, Njoku & Obi-Nwosu, 2024) and the observation that most pregnant women in LMICs attend at least some maternal health services. However, it is contrasted with reports of continued poor utilization of childbirth services in some Nigerian states, which could be due to variations in study location, population and measurement. High aggregate utilisation indicates high predisposing awareness and a certain level of enabling access, especially for antenatal and immunisation services, in the case of Andersen's (1968) model.

The obstacles that are built into the utilisation data are as telling as the data itself. Women indicated that they do not attend postnatal care due to low attitude of staff and not using services that they felt were not adequately equipped, and that they attend antenatal care consistently. These findings reflect the Health Belief Model's focus on perceived barriers and the enabling and need dimensions of Andersen's model: provider attitude, equipment adequacy and awareness are barriers or enablers that mediate between latent willingness and use. They also resonate with the previous findings in Nigeria that provider attitude and facility inadequacy are significant barriers to maternal-service use (Onah, Ikeako & Iloabachie, 2018; Olayinka et al., 2019).

The high level of support for enhancement strategies provides a clear and community supported agenda for action. The respondents put emphasis on provider responsiveness, regular contact with the community, ongoing staff training, referral support (ambulance) and mass-media promotion. This combination is well supported by the literature: community-based participatory interventions and health education and mobilisation have been linked to improved maternal service utilisation in Nigeria and other sub-Saharan African countries (Datiko et al., 2019; Samuel et al., 2022), while awareness campaigns that increase perceived benefit and susceptibility align with the Health Belief Model's predictions. The endorsement of telehealth and of stronger village birth attendants also indicates openness to hybrid models which can help to bring formal services into rural communities.

There is also a large zonal variation in utilisation ($\chi^2 = 125.245$; $p < 0.05$), suggesting that like provision, utilisation is geographically uneven. Use of antenatal care was more common in Zone A while delivery-care was more common in Zone B, which aligns with evidence that there are significant differences in maternal-service use among geographical zones, which could be attributed to socio-economic development disparities (Onononokpono & Odimegwu, 2021). Enhancement efforts must therefore be zone sensitive and not uniform and must focus on the specific services that are under-used in each zone.

The findings have several policies and practice implications for nursing. First, the combination of high aggregate utilisation with large gaps in service-specific and zonal utilisation should be a warning against seeing only headline coverage figures, and monitoring should be disaggregated by service and by zone to make visible and prioritise under-used components, in this case consistent antenatal attendance and postnatal care. Second, the importance of provider attitude as a barrier places part of the solution in the health workforce itself: interpersonal quality of care, respectful maternity care and continuing professional development are things nurses and midwives can influence and lead. Third, the community's own acceptance of the demand-side strategies (community engagement, mass-media promotion and referral support) indicates that interventions co-designed with women and delivered close to where they live will be likely to be acceptable and to increase perceived benefit, in the sense of the Health Belief Model. Lastly, the acceptance of telehealth and of improved village birth attendants suggest an opportunity for hybrid service delivery models to bring skilled care to rural communities before the completion of facilities..

6.0 Conclusion

The maternal health services are highly utilised by women of reproductive age in Benue State but there is inequitable utilization of maternal health services across the three geographical zones of the state and utilization is limited by provider attitude, equipment adequacy and awareness especially for postnatal and consistent antenatal care. A clear package of strategies to improve utilisation was strongly supported and focused on community engagement, provider responsiveness and training, mass-media promotion, and referral support. Enhancing utilisation will involve addressing the demand side awareness and the supply side quality issues that influence women's health-seeking decisions.

7.0 Recommendations

Government, donor organisations and non-governmental organisations should make available free or highly subsidised maternal-health supplies, services and equipment and expand maternal-health programmes into remote communities to increase access. Health workers should be encouraged to engage with the community regularly and to promote maternal-health benefits via radio and television, to raise awareness and perceived benefit. Providers need to be trained and incentivised to be responsive to women's concerns and to enhance the interpersonal nature of the services, which can overcome attitude related barriers to uptake of postnatal services. Referral systems, including ambulance provision, and hybrid approaches, like improved village birth attendants and telehealth, should be developed, and strategies adapted to the different services that are under-used in each geographical zone.

8.0 Limitations

Self-report data was used and although confidentiality was assured some were reticent in filling out the questionnaire and some had problems recalling past events, which may have influenced the accuracy of some answers. The cross-sectional design also does not allow causal inferences to be made regarding the determinants of utilisation.

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