Closing the Gap in Maternal Healthcare in Nigeria: Are Women with Low Socioeconomic Status Still Left Behind?

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DOI:10.56201/jhsp.vol.11.no6.2025.pg45.61

Abstract
Despite global and national efforts to improve maternal health, Nigeria continues to record high maternal mortality rates, primarily driven by the underutilization of essential maternal health services. This study examines the association between women's socioeconomic status (SES) and the utilisation of antenatal care (ANC), skilled birth attendance (SBA), postnatal care (PNC), and contraceptive use (CPuse), while controlling for demographic and contextual factors. Using data from the 2017 Multiple Indicator Cluster Survey (MICS), a weighted sample of reproductive-age women (15–49 years) was analysed through both bivariate and multivariate logistic regression models. Results from the bivariate analysis revealed a strong, positive correlation between SES and utilisation of all four maternal health services. Women in the high SES group were significantly more likely to access ANC (β=1.218, $p<0.001$), SBA (β=2.644, $p<0.001$), PNC (β=1.342, $p<0.001$), and CPuse (β=1.189, $p<0.001$) compared to those in the low SES group. However, multivariate analysis revealed that the positive association between high SES and PNC diminished after controlling for education, parity, media exposure, and region. Education, urban residence, ethnicity, and media access remained significant predictors of service utilisation. Notably, parity was inversely associated with SBA and PNC, while regional disparities persisted across all outcomes. These findings underscore the need for targeted, equity-focused interventions that address structural and informational barriers among socioeconomically disadvantaged women. Strengthening maternal healthcare systems through culturally tailored programs, expanded media outreach, and enhanced financial protection mechanisms is essential to reducing inequalities and achieving maternal health targets under SDG 3 in Nigeria.

Keywords: *maternal health; socioeconomic status; health service utilisation; inequities in healthcare; reproductive health.*

Introduction

Maternal mortality remains a persistent global health challenge, revealing stark inequalities between high- and low-income countries. According to the most recent estimates by the World Health Organisation (WHO), approximately 287,000 women died in 2023 from pregnancy-related causes—an indicator that has shown no significant global decline since 2016 despite earlier progress (World Health Organisation, 2025). The global maternal mortality ratio (MMR) currently stands at 223 per 100,000 live births; however, wide regional disparities persist: low-income countries face an MMR of 430 per 100,000 live births, while high-income countries report as few as 12 per 100,000 live births (WHO, 2025).

Nigeria continues to contribute disproportionately to this burden, accounting for approximately 20% of global maternal deaths. It is estimated that 145 women die daily from pregnancy-related

causes in Nigeria, translating to more than 50,000 deaths annually (Centre for Reproductive Rights [CRR], 2017; WHO, 2021). These deaths are largely preventable and are primarily due to complications such as haemorrhage, sepsis, hypertensive disorders, and obstructed labour, often exacerbated by limited access to skilled care, especially in rural and underserved communities (WHO, 2021; Ntoimo et al., 2020).

Data from the 2018 Nigeria Demographic and Health Survey (NDHS) highlight profound disparities in maternal healthcare utilisation. While 67% of women reported receiving antenatal care (ANC) from a skilled provider during their most recent birth, only 57% had four or more ANC visits, the minimum recommended by the WHO (National Population Commission [NPC] & ICF, 2019; UNICEF, 2015). Geographic, educational, and economic inequalities are significant. For instance, 89% of women in the South-East received ANC from a skilled provider, compared to 54% in the North-West. Similarly, 97% of women with post-secondary education received skilled ANC, versus 45% of those with no education. Women in the highest wealth quintile are significantly more likely to access ANC than those in the lowest quintile.

Skilled attendance at birth remains worryingly low. Nationally, only 43% of births were attended by skilled health personnel, and 39% occurred in health facilities (NPC & ICF, 2019). Urban–rural differences are notable: in urban areas, 66% of childbirths were attended by a skilled provider, and 61% occurred in a health facility, compared to 29% and 26%, respectively, in rural settings. These disparities are even more extreme at the state level; while skilled professionals assisted 95% of childbirths in Osun and Abia, only 9% and 12% of births in Kebbi and Zamfara, respectively, were attended by skilled personnel (Ajayi & Akpan, 2020; Aikpitanyi, 2022).

Postnatal care (PNC) is critical for preventing maternal and neonatal deaths, especially within the first 48 hours after childbirth. Yet, only 42% of Nigerian women reported receiving a check-up within two days of giving birth (NPC & ICF, 2019). Urban women (61%) were twice as likely as rural women (30%) to receive early PNC. Utilisation of PNC also increases significantly with education and wealth.

Despite the presence of initiatives such as the Safe Motherhood Initiative and the WHO's Ending Preventable Maternal Mortality (EPMM) strategy, access to quality maternal healthcare remains deeply unequal (WHO, 2021). Socioeconomic status, education, and geography are among the strongest predictors of service utilisation. Financial constraints, lack of health infrastructure, and sociocultural norms further marginalise women, especially in the northern regions of Nigeria (UNICEF, 2008; Aikpitanyi, 2022).

This study investigates the magnitude of these inequalities in maternal healthcare utilisation and examines the influence of women's socioeconomic status, particularly education, household wealth, and place of residence, on their use of antenatal, skilled birth care, and postnatal care services. Understanding these disparities is critical for developing equitable, evidence-informed interventions that can reduce maternal deaths and advance Nigeria's progress toward achieving Sustainable Development Goal (SDG) 3.1: reducing the global maternal mortality ratio to less than 70 per 100,000 live births by 2030.

Methods

Study design and data source

This study employed a quantitative, cross-sectional design using secondary data derived from the 2017 Multiple Indicator Cluster Survey (MICS) conducted in Nigeria. The MICS is a nationally representative household survey developed and implemented by national governments in collaboration with the United Nations Children's Fund (UNICEF). It collects detailed information on maternal, neonatal, and child health indicators among women aged 15–49, children under five, and men aged 15–49 (UNICEF, 2019). Since its inception in 1995, the MICS program has been conducted in over 108 countries and is recognised for its rigorous

methodology and its role as a critical source of data for monitoring progress toward the Sustainable Development Goals (SDGs).

Sample population

The analytical sample was restricted to women aged 15–49 who had given birth in the five years preceding the survey. Women who gave birth in a health facility (public or private) were categorised as having utilised skilled birth care services, whereas those who given birth elsewhere were categorised as non-users. This binary outcome was coded as "1" for utilisation and "0" for non-utilisation.

Outcome variables

Four maternal healthcare utilisation outcomes were examined:

i. Antenatal Care (ANC): Frequency of ANC visits was coded as “1” if the respondent had four or more visits and “0” otherwise, in line with WHO recommendations for minimum ANC coverage (WHO, 2016).
ii. Skilled Birth Attendance (SBA): Based on the question, “Who assisted with the delivery of your last child?”, responses were recoded as “1” for skilled providers (e.g., doctors, nurses, or midwives) and “0” for unskilled or no assistance.
iii. Postnatal Care (PNC): Derived from the question, “Did anyone check on your health within 48 hours after the delivery of your last child?”, with “1” indicating receipt of PNC and “0” indicating otherwise.
iv. Use of Modern Contraceptives: Women were asked whether they were currently using any method to prevent pregnancy. Responses were coded “1” for use of modern contraceptives and “0” for non-use.

Explanatory variables

The primary explanatory variable was women’s socioeconomic status, measured using two indicators:

i. Household Wealth Index: The wealth index, a standard MICS measure, was calculated using principal component analysis of household assets, including ownership of durable goods, housing characteristics, and access to water and sanitation. Households were categorised into five quintiles: poorest, poorer, middle, richer, and richest (UNICEF, 2019).
ii. Educational Attainment: This was dichotomised into two categories: women with no formal education and those with at least primary education.

Control variables

Sociodemographic covariates included age group (15–24, 25–34, 35–44, and 45+), marital status, parity, residence (urban/rural), ethnicity, region (geopolitical zone), and exposure to mass media (access to radio and/or television).

Data analysis

Descriptive statistics were used to summarise respondents' sociodemographic characteristics. Bivariate associations between outcome and explanatory variables were examined using chi-square tests. Variables with significant associations at $p < 0.10$ were considered for inclusion in multivariate models.

To estimate the relationship between women’s socioeconomic status and maternal healthcare utilisation, binary logistic regression models were employed. All outcome variables were binary, coded as “1” for service utilisation and “0” otherwise. Logistic regression is suitable

for modelling binary outcomes and enables the estimation of the odds of service utilisation as a function of socioeconomic and control variables.

Multicollinearity among independent variables was tested using the Pearson correlation coefficient and the variance inflation factor (VIF). All explanatory and control variables were included as categorical variables. Statistical analyses were performed using STATA version 17 (StataCorp, 2021). Statistical significance was determined at the 5% level ($p < .05$).

Results

Table 1 presents the distribution of women in the sample by socioeconomic status (SES), sociodemographic factors, and their utilisation of maternal health services, including antenatal care (ANC), skilled birth attendance (SBA), postnatal care (PNC), and contraceptive use. Overall utilisation rates show that 74.3% of women reported receiving ANC, 43.1% had SBA, 14.9% received PNC, and 13.8% used contraceptives. Maternal health service utilisation was positively associated with higher socioeconomic status. Women in the high SES category constituted 40.0% of those who accessed ANC, 26.8% of SBA users, and 4.6% of those receiving PNC. Contraceptive use was also highest among women in the high SES group (8.8%) compared to the middle (5.4%) and low SES groups (2.4%).

Table 1: Distribution of women based on socioeconomic status, sociodemographic characteristics, and utilisation of maternal health services

Variables	**ANC**		**SBA**		**PNC**		**CPuse**	
	No N (%) 1963 (25.7)	Yes N (%) 5665 (74.3)	No N (%) 6369 (56.9)	Yes N (%) 4816 (43.1)	No N (%) 4892 (85.1)	Yes N (%) 857 (14.91)	No N (%) 26476(86.2)	Yes N (%) 4240 (13.8)
SES Low Middle High	933 (12.2) 45 (5.9) 579 (7.6)	1456 (19.1) 1156 (15.2) 3053 (40.0)	4124 (36.8) 1246 (11.1) 999 (8.9)	891 (7.9) 943 (8.4) 3001 (26.8)	3447 (59.9) 882 (15.3) 563 (9.8)	400 (6.9) 207 (3.6) 250 (4.6)	10011 (32.6) 5296 (17.2) 11169 (36.4)	740 (2.4) 789 (2.6) 2711 (8.8)
Age 15-24 25-34 35-44 >44	608 (7.9) 909 (11.9) 394 (5.2) 52 (0.7)	1401 (18.4) 2972 (38.9) 1192 (15.6) 100 (1.3)	2000 (17.9) 2900 (25.8) 1287 (11.5) 182 (1.6)	1119 (9.9) 2568 (22.9) 1068 (9.5) 80 (0.7)	1511 (26.3) 2214 (38.5) 1024 (17.8) 143 (2.9)	290 (5.0) 382 (6.6) 168 (2.9) 17 (0.3)	10495 (34.2) 7914 (25.8) 5922 (19.3) 2145 (6.9)	868 (2.8) 1662 (5.4) 1349 (4.4) 361 (1.2)
Education Not educated Educated	588 (7.71) 1375 (18.0)	860 (11.3) 4805 (62.9)	2307 (20.6) 4062 (36.3)	606 (5.4) 4229 (37.8)	1975 (34.4) 2917 (50.7)	160 (2.8) 697 (12.1)	5691 (18.5) 20783 (67.7)	495 (1.6) 3744 (12.2)

Marital status Married Divorced Single	1886(24.8) 33 (0.4) 43 (0.6)	5360 (70.3) 150 (1.9) 149 (2.0)	93 (0.83) 115 (1.03) 6157 (55.02)	151 (1.4) 131 (1.2) 4544 (4.6)	44 (0.8) 84 (1.5) 4762 (82.7)	33 (0.6) 21 (0.4) 803 (14.0)	8073 (26.3) 1232 (4.0) 17116 (55.8)	760 (2.5) 180 (0.6) 3296 (10.8)
Parity 1 2-3 >4	320 (4.2) 635 (8.2) 1008(13.2)	1065 (14.0) 2034 (26.7) 2566 (33.6)	871 (7.7) 1931 (17.2) 3567 (31.8)	1031 (9.2) 1793 (16.0) 2011 (18.0)	612 (10.7) 1465 (25.5) 2815 (49.0)	151 (2.6) 275 (4.8) 431 (7.5)	2738 (12.9) 5515 (25.9) 9501 (44.7)	304 (1.4) 1112 (5.2) 2088 (9.8)
Residence Urban Rural	423 (5.6) 1540(20.2)	2116 (27.7) 3549 (46.5)	867 (7.7) 5502 (49.1)	2033 (18.2) 2802 (25.0)	577 (10.0) 4315 (75.1)	189 (3.3) 668 (11.6)	8222 (26.8) 18254(59.5)	1870 (6.1) 2370 (7.7)
Media: Radio Not at all Less than once At least once Everyday	1082(14.2) 238 (3.1) 239 (3.1) 402 (5.3)	2222 (29.1) 928 (12.2) 1074 (14.1) 1436 (18.8)	4039 (36.1) 671 (6.0) 723 (6.5) 930 (8.3)	1757 (15.7) 865 (7.7) 967 (8.6) 1245 (11.1)	3278 (57.0) 456 (7.9) 515 (7.0) 639 (11.1)	416 (7.2) 145 (2.5) 130 (2.3) 165 (2.9)	12730 (41.4) 4215 (13.7) 4443 (14.5) 5066 (16.5)	1291 (4.2) 810 (2.6) 974 (3.2) 1164 (3.8)
Media: TV Not at all Less than once At least once Everyday	1232 (16.2) 197 (2.6) 205 (2.69) 327 (4.3)	2242 (29.4) 782 (10.3) 946 (12.4) 1690 (22.2)	4837 (43.2) 461 (4.1) 506 (4.5) 559 (5.0)	1549 (13.8) 764 (6.8) 1642 (14.7)	3966 (70.0) 268 (4.7) 331 (5.8) 321 (5.6)	479 (8.3) 131 (2.3) 114 (2.0) 132 (2.3)	13115 (42.7) 3465 (11.3) 3794 (12.4) 6078 (19.8)	1199 (3.9) 693 (2.3) 852 (2.8) 1492 (4.9)
Ethnicity Hausa Igbo Yoruba Others	1135 (14.9) 131 (1.7) 92 (1.2) 605 (7.9)	1991 (26.1) 986 (12.9) 890 (11.7) 1798 (23.6)	4498 (40.2) 169 (1.5) 168 (1.5) 1534 (13.5)	1104 (9.9) 1080 (9.6) 914 (8.2) 1737 (15.5)	3628 (63.1) 84 (1.5) 111 (1.9) 1069 (18.6)	436 (7.6) 30 (0.5) 68 (1.2) 323 (5.6)	10685 (34.8) 3589 (11.7) 3125 (10.2) 9077 (29.6)	874 (2.9) 846 (2.8) 891 (2.9) 1629 (5.3)

Regions								
North Central	330 (4.3)	998 (13.1)	935 (8.4)	1045 (9.3)	721 (12.5)	148 (2.6)	5247 (17.1)	1077 (3.5)
North-East	470 (6.2)	711 (9.3)	1389 (12.4)	498 (4.4)	1122 (19.5)	90 (1.6)	7361 (24.0)	351 (1.1)
North-West	786 (10.3)	1418 (18.6)	3343 (29.8)	680 (6.1)	2722 (47.4)	307 (5.3)	2739 (8.9)	585 (1.9)
South-East	105 (1.4)	722 (9.6)	124 (1.1)	810 (7.2)	54 (0.9)	20 (0.4)	3669 (11.9)	653 (2.1)
South-South	183 (2.4)	839 (11.0)	404 (3.6)	806 (7.2)	161 (2.8)	217 (3.8)	3232 (10.5)	722 (2.4)
South-West	89 (1.2)	977 (12.8)	174 (1.6)	996 (8.9)	112 (2.0)	75 (1.3)		852 (2.8)

SES = Socioeconomic status; ANC = Antenatal care; SBA = Skilled birth attendants; PNC = Postnatal care; CPuse = Contraceptive use

ANC and SBA utilisation were highest among women aged 25–34 years (38.9% and 22.9%, respectively), followed by the 35–44 age group. PNC and contraceptive use followed a similar age distribution, with the 25–34 age group being the most represented. Notably, adolescent women aged 15–24 had lower levels of service use across all indicators. Education emerged as a strong predictor of maternal health service use. Educated women accounted for 62.9% of ANC users, 37.8% of those with SBA, 12.1% of PNC users, and 12.2% of contraceptive users, underscoring the importance of female education in improving maternal health outcomes. Married women comprised the majority of service users across all categories: 70.3% for ANC, 4.6% for SBA, 12.1% for PNC, and 26.3% for contraceptive use. Single and divorced women represented a smaller fraction of users, highlighting possible social or cultural barriers limiting access. Women with 2–3 children were most likely to utilise ANC (26.7%), SBA (16.0%), and PNC (4.8%). However, contraceptive use was more prevalent among women with four or more children (9.8%), suggesting increased uptake following high parity.

Urban women consistently reported higher levels of maternal health service utilisation compared to their rural counterparts. Urban residents accounted for 27.7% of ANC users, 25.0% of SBA users, 11.6% of PNC users, and 7.7% of contraceptive users, reflecting better access and availability of services in urban areas. Exposure to radio and television was positively associated with utilisation. Among women who listened to the radio daily, 18.8% received ANC, and 11.1% had SBA. Daily television viewers made up 22.2% of ANC users and 14.7% of SBA users. This trend extended to PNC and contraceptive use, indicating that frequent media exposure may enhance awareness and promote health-seeking behaviours. Ethnic disparities were evident. Hausa women made up the largest share of ANC (26.1%) and SBA users (9.9%), yet had relatively low PNC (1.5%) and contraceptive use (2.9%). Yoruba and Igbo women, although fewer in number, had comparatively higher rates of service utilisation, particularly for PNC and contraception. Women from the North-West region reported the highest use of ANC (18.6%) and SBA (6.1%) but had disproportionately low PNC (5.3%) and contraceptive use (1.9%). Conversely, regions in the South, particularly the South-West and South-East, had higher rates of PNC and contraceptive use, suggesting substantial regional variation in access and utilisation patterns.

Table 2 presents the results of a linear regression model estimating the determinants of women's socioeconomic status (SES). The model explains a substantial portion of the variance in SES, with an adjusted R-squared of 0.6204, indicating that the included variables account for approximately 62% of the variation in SES among the sample of 24,300 women. The model is

statistically significant ($p < 0.0000$). Age was significantly and positively associated with SES. Compared to women aged 15–24 (reference group), those aged 25–34 ($\beta = 0.074$, $p < 0.01$), 35–44 ($\beta = 0.091$, $p < 0.01$), and over 44 ($\beta = 0.118$, $p < 0.01$) were more likely to have higher SES. This suggests that older women may accumulate more resources or have better access to education and employment opportunities over time. Education was a strong and significant predictor of SES. Women with at least primary education had significantly higher SES compared to their uneducated counterparts ($\beta = 0.204$, $p < 0.01$), reinforcing the established link between educational attainment and improved economic well-being. Marital status was less strongly associated with SES. While being divorced had no statistically significant effect ($\beta = -0.011$, $p > 0.1$), single women had significantly lower SES compared to married women ($\beta = -0.038$, $p < 0.1$). This may reflect the economic benefits of household cohabitation or dual income support in marriage.

Table 2: Determinants of socioeconomic status among childbearing women

Variables	Coeff (Std. Err)
Age	
15-24	Ref
25-34	0.074*** (0.011)
35-44	0.091*** (0.013)
>44	0.118*** (0.016)
Education	
Not educated	Ref
Educated	0.204*** (0.009)
Marital status	
Married	Ref
Divorced	-0.011 (0.016)
Single	-0.038* (0.024)
Parity	
1	Ref
2-3	-0.035*** (0.012)
>4	-0.080*** (0.013)
Residence	
Urban	Ref
Rural	-0.529*** (0.009)
Media – Radio	
Everyday	Ref
Once a week	-0.041*** (0.012)
Less than once	-0.066*** (0.013)
Not at all	-0.100*** (0.011)
Media – TV	
Everyday	Ref
Once a week	-0.181*** (0.013)

Less than once Not at all	-0.299*** (0.014) -0.881*** (0.012)
Ethnicity Hausa Igbo Yoruba Others	 Ref 0.152 *** (0.023) 0.199*** (0.020) 0.042*** (0.011)
Region North Central North-East North-West South-East South-South South-West	 Ref -0.102*** (0.013) -0.206*** (0.013) 0.234*** (0.025) 0.278*** (0.014) -0.014 (0.018)
No of observation Prob > F R-Squared Adjusted R-Squared	24300 0.0000 0.6207 0.6204

Coeff = Coefficient; Std. Err = Standard Error; *, *** = Significant p-values at 1% and 10%

Higher parity was negatively associated with SES. Women with 2–3 children ($\beta = -0.035$, $p < 0.01$) and more than 4 children ($\beta = -0.080$, $p < 0.01$) had significantly lower SES than those with one child. This suggests that higher fertility may strain household resources or reflect lower access to family planning and education. Living in rural areas was strongly associated with lower SES ($\beta = -0.529$, $p < 0.01$), highlighting the persistent urban–rural divide in wealth, infrastructure, and access to social services. Frequent exposure to mass media, both radio and television, was positively associated with SES. Compared to women who had daily access to radio, those who listened once a week ($\beta = -0.041$, $p < 0.01$), less than once a week ($\beta = -0.066$, $p < 0.01$), or not at all ($\beta = -0.100$, $p < 0.01$) had significantly lower SES. A similar pattern was observed for television exposure, with the most significant negative association found among those who never watched TV ($\beta = -0.881$, $p < 0.01$). These findings highlight the role of media exposure in promoting awareness, social mobility, and access to opportunities.

Ethnic background was significantly associated with SES. Compared to Hausa women (reference group), Igbo ($\beta = 0.152$, $p < 0.01$), Yoruba ($\beta = 0.199$, $p < 0.01$), and women from other ethnic groups ($\beta = 0.042$, $p < 0.01$) had significantly higher SES. This suggests that SES varies markedly across ethnic groups, potentially due to cultural, historical, or regional economic differences. Regional disparities in SES were also evident. Compared to women in the North Central region (reference), those in the North-East ($\beta = -0.102$, $p < 0.01$) and North-West ($\beta = -0.206$, $p < 0.01$) had significantly lower SES, whereas those in the South-East ($\beta = 0.234$, $p < 0.01$) and South-South ($\beta = 0.278$, $p < 0.01$) had significantly higher SES. There was no statistically significant difference for the South-West region ($\beta = -0.014$, $p > 0.1$). These findings highlight persistent regional inequalities in Nigeria, with the northern areas generally experiencing lower socioeconomic development.

Table 3 illustrates the gradients in maternal health service utilisation across different levels of women's socioeconomic status (SES), using women with low SES as the reference group. The analysis reveals statistically significant and positive associations between higher SES and the utilisation of all four maternal health services.

Table 3: Correlation between women's socioeconomic status and utilisation of maternal health services

Variables	ANC Coeff (Std. Err)	SBA Coeff (Std. Err)	PNC Coeff (Std. Err)	CPuse Coeff (Std. Err)
SES Low SES Middle SES High SES	 Ref 0.496*** (0.069) 1.218*** (0.062)	 Ref 1.264*** (0.057) 2.644*** (0.052)	 Ref 0.704*** (0.094) 1.342*** (0.093)	 Ref 0.701*** (0.054) 1.189*** (0.044)

Coeff = Coefficient; Std. Err = Standard Error; *, *** = Significant p-values at 1% and 10%

Antenatal Care (ANC)

Compared to women in the low SES group, those with middle SES were 49.6 percentage points more likely to utilise ANC services ($\beta = 0.496$, $p < 0.01$), while women with high SES were even more likely to do so ($\beta = 1.218$, $p < 0.01$). This demonstrates a clear positive socioeconomic gradient in antenatal care utilisation, likely reflecting greater health awareness, affordability, and access among wealthier women.

Skilled Birth Attendance (SBA)

A stronger association is observed between skilled birth attendance and the outcome. Women with middle SES had significantly higher odds of accessing skilled care during childbirth ($\beta = 1.264$, $p < 0.01$) compared to low SES women, and the coefficient for high SES women was even higher ($\beta = 2.644$, $p < 0.01$). These findings suggest that socioeconomic advantage plays a significant role in securing professional care at childbirth.

Postnatal Care (PNC)

The use of postnatal care services also increased significantly with SES. Middle SES women were 70.4 percentage points more likely to use postnatal care compared to those with low SES ($\beta = 0.704$, $p < 0.01$), and high SES women were 134.2 percentage points more likely ($\beta = 1.342$, $p < 0.01$). These results further underscore SES as a critical determinant of postnatal care uptake.

Contraceptive Use (CPuse)

A similar SES gradient was observed in contraceptive use. Compared to women with low SES, those with middle SES had significantly higher contraceptive use ($\beta = 0.701$, $p < 0.01$), and this effect was stronger among women with high SES ($\beta = 1.189$, $p < 0.01$). These results suggest that economic empowerment may lead to improved access to family planning information and services.

Overall, the results indicate a strong and consistent positive relationship between socioeconomic status and the utilisation of key maternal health services. Higher SES is significantly associated with greater uptake of antenatal care, skilled birth attendance, postnatal care, and contraceptive use. The increasing coefficients across service types suggest that economic and social advantages enable women to overcome barriers to maternal healthcare, such as financial constraints, geographic inaccessibility, or limited health literacy. This evidence supports targeted interventions to reduce economic and informational inequalities in maternal healthcare. Addressing these SES-related disparities is essential for improving maternal health outcomes and advancing equity in access to life-saving services.

Table 4 presents the results of multivariate logistic regression analyses examining the associations between women's socioeconomic status (SES) and the utilisation of four maternal health services: antenatal care (ANC), skilled birth attendance (SBA), postnatal care (PNC), and contraceptive use (CPuse), adjusting for relevant sociodemographic covariates.
Compared to women in the lowest SES category, those in the middle SES category were significantly more likely to utilise ANC (β = 0.128, $p < 0.10$), SBA (β = 0.528, $p < 0.01$), and CPuse (β = 0.423, $p < 0.01$). High SES was associated with even greater odds of SBA (β = 1.150, $p < 0.01$) and CPuse (β = 0.675, $p < 0.01$). However, no significant association was found between SES and PNC utilisation after adjustment.

Table 4: Multivariate logistic regression of women's socioeconomic status, utilisation of maternal health services, and other control variables

Variable	ANC Coeff (Std. Err)	SBA Coeff (Std. Err)	PNC Coeff (Std. Err)	CPuse Coeff (Std. Err)
SES Low SES Middle SES High SES	 Ref 0.128* (0.077) 0.366*** (0.095)	 Ref 0.528*** (0.069) 1.150*** (0.082)	 Ref -0.055 (0.113) -0.072 (0.145)	 Ref 0.423*** (0.065) 0.675*** (0.072)
Age 15-24 25-34 35-44 >44	 Ref 0.159* (0.078) 0.152 (0.101) -0.029 (0.197)	 Ref 0.308*** (0.071) 0.573*** (0.091) 0.397** (0.181)	 Ref -0.063 (0.113) -0.104 (0.147) -0.183 (0.300)	 Ref 0.007 (0.069) -0.047 (0.075) -0.372*** (0.092)
Education Not educated Educated	 Ref 0.300*** (0.069)	 Ref 0.381*** (0.064)	 Ref 0.632*** (0.103)	 Ref 0.333*** (0.059)
Marital status Married Divorced Single	 Ref 0.375* (0.202) -0.176 (0.189)	 Ref -0.098 (0.159) -0.329** (0.161)	 Ref -0.407 (0.284) 0.029 (0.286)	 Ref -0.465*** (0.091) -0.052 (0.135)
Parity 1 2-3 >4	 Ref -0.088 (0.088) -0.122 (0.099)	 Ref -0.527*** (0.080) -0.801*** (0.090)	 Ref -0.279** (0.131) -0.282** (0.148)	 Ref 0.631*** (0.075) 1.016*** (0.078)
Residence Urban	 Ref	 Ref	 Ref	 Ref

Rural	-0.162** (0.078)	-0.479*** (0.069)	-0.359*** (0.125)	-0.165*** (0.049)
Media – Radio Everyday Once a week Less than once Not at all	 Ref 0.184** (0.097) 0.085 (0.101) -0.110 (0.079)	 Ref -0.113 (0.088) -0.232** (0.091) -0.437 (0.075)	 Ref -0.306** (0.148) -0.263** (0.079) -0.606*** (119)	 Ref -0.049 (0.059) -0.090 (0.063) -0.381*** (0.057)
Media – TV Everyday Once a week Less than once Not at all	 Ref -0.038 (0.104) -0.133 (0.112) -0.207** (0.098)	 Ref -0.240** (0.091) -0.213** (0.097) -0.507*** (0.087)	 Ref -0.061 (0.171) 0.112 (0.177) -0.278** (0.157)	 Ref -0.075 (0.059) -0.215*** (0.066) -0.372*** (0.067)
Ethnicity Hausa Igbo Yoruba Others	 Ref 0.645*** (0.204) 0.333** (0.177) 0.084 (0.085)	 Ref 1.452*** (0.182) 0.728*** (0.145) 0.682*** (0.074)	 Ref -0.754* (0.427) -0.315 (0.278) -0.409** (0.141)	 Ref 0.315** (0.115) 0.530*** (0.098) 0.441*** (0.067)
Region North-Central North-East North-West South-East South-South South-West	 Ref -0.414*** (0.095) -0.307*** (0.099) 0.109 (0.221) 0.146 (0.112) 0.767*** (0.169)	 Ref -0.596*** (0.082) -1.196*** (0.085) 0.461** (0.202) -0.252** (0.091) 0.534*** (0.136)	 Ref -0.944*** (0.154) -0.974*** (0.141) 0.879** (0.495) 1.706*** (0.165) 0.797*** (0.253)	 Ref -0.431*** (0.077) -0.565*** (0.076) -0.111 (0.116) -0.619*** (0.068) -0.338*** (0.083)

Coeff = Coefficient; Std. Err = Standard Error; *, *** = Significant p-values at 1% and 10%

Age and Parity

Age was a significant predictor of SBA, with women aged 25–34 ($\beta = 0.573$, $p < 0.01$) and 35–44 ($\beta = 0.397$, $p < 0.05$) more likely to receive skilled attendance during childbirth compared to the 15–24 age group. Conversely, age was not significantly associated with ANC or PNC. In contrast, women aged over 44 were significantly less likely to use modern contraceptives ($\beta = -0.372$, $p < 0.01$). Parity showed divergent effects across outcomes. Women with two to three children or more than four children were significantly less likely to access SBA ($\beta = -0.527$ and -0.801, respectively; both $p < 0.01$) and PNC ($\beta = -0.279$ and -0.282, respectively; both p

< 0.05) compared to first-time mothers. However, higher parity was associated with increased contraceptive use (β = 0.631 for 2–3 children and β = 1.016 for ≥4 children; both $p < 0.01$).

Education and Marital Status

Education emerged as a consistent and significant predictor of maternal health service use across all outcomes. Educated women were more likely to attend ANC (β = 0.300, $p < 0.01$), receive SBA (β = 0.381, $p < 0.01$), utilise PNC services (β = 0.632, $p < 0.01$), and use contraceptives (β = 0.333, $p < 0.01$), compared to uneducated counterparts. Regarding marital status, divorced women were significantly less likely to use SBA (β = -0.329, $p < 0.05$) and contraceptives (β = -0.465, $p < 0.01$), while no significant differences were found for ANC or PNC. Single women did not differ significantly from married women in their use of maternal health services.

Residence and Media Exposure

Rural residence was associated with significantly lower utilisation of all four services: ANC (β = -0.162, $p < 0.05$), SBA (β = -0.479, $p < 0.01$), PNC (β = -0.359, $p < 0.01$), and CPuse (β = -0.165, $p < 0.01$), underscoring persistent urban–rural disparities in maternal healthcare access. Regular media exposure, particularly daily radio listening, was associated with increased use of ANC (β = 0.184, $p < 0.05$) and decreased use of PNC (β = -0.306 to -0.606, $p < 0.01$). Conversely, infrequent or no exposure to radio or television was significantly associated with a reduced likelihood of SBA, PNC, and CPuse. For example, women who never watched TV were significantly less likely to use SBA (β = -0.507, $p < 0.01$) and contraceptives (β = -0.372, $p < 0.01$).

Ethnicity

Compared to Hausa women, those of Igbo and Yoruba ethnicity were significantly more likely to use SBA (β = 1.452 and 0.728, respectively; both $p < 0.01$) and CPuse (β = 0.530 and 0.441; both $p < 0.01$). However, Hausa women had higher ANC utilisation relative to other groups (e.g., Igbo: β = 0.645, $p < 0.01$). Ethnic differences in PNC use were less consistent, with negative associations observed for Igbo and Yoruba women.

Regional Disparities

Marked regional differences were observed across all outcomes. Women residing in the North-East and North-West regions were significantly less likely to use ANC, SBA, PNC, and CPuse compared to those in the North-Central region. For example, the odds of SBA were substantially lower in the North-East (β = -0.596, $p < 0.01$) and North-West (β = -1.196, $p < 0.01$). In contrast, women in the South-South and South-East regions reported higher utilisation of PNC (β = 1.706 and 0.879, respectively; both $p < 0.01$). Contraceptive use was significantly lower in the South-East (β = -0.619, $p < 0.01$) and other regions relative to the North-Central zone.

Discussion

This study examined the factors that influence women's socioeconomic status (SES) and its association with the utilisation of key maternal health services, including antenatal care (ANC), skilled birth attendance (SBA), postnatal care (PNC), and contraceptive use (CP use), among childbearing women in Nigeria. The findings highlight the significant and positive role of higher socioeconomic standing in enhancing maternal health service uptake, while also revealing significant demographic, regional, and sociocultural disparities that may hinder equitable access to care.

The results show that women in the middle and high SES categories were significantly more likely to utilise ANC, SBA, PNC, and contraceptive services compared to their low-SES counterparts. This is consistent with prior research indicating that household wealth and economic empowerment are critical enablers of health-seeking behaviour, particularly in low- and middle-income countries (LMICs) (Hajizadeh et al., 2014; Malqvist et al., 2017). Socioeconomic empowerment not only improves women's ability to afford health services but also enhances their autonomy in decision-making and access to information, factors that are essential for navigating complex maternal health systems (Biswas et al., 2024; Taleb et al., 2022).

Education emerged as a robust predictor across all maternal health indicators. Educated women were significantly more likely to seek ANC, give birth with skilled assistance, access PNC, and use modern contraceptives. These findings align with global evidence demonstrating that maternal education is one of the most potent drivers of favourable health outcomes, likely due to improved health literacy, negotiation skills within households, and greater receptivity to health messaging (Edu et al., 2017; Ononokpono et al., 2014; Tsawe et al., 2015). As such, promoting female education, especially beyond the primary level, should remain a key policy priority for improving maternal health.

Interestingly, the study observed that higher parity was associated with lower use of SBA and PNC, but higher contraceptive uptake. This pattern suggests that while multiparous women may become less inclined to utilise skilled birth care or postnatal care, possibly due to previous unassisted births or perceived experience, they are more motivated to adopt family planning to limit or space future births. These findings highlight the need for tailored interventions that address the complacency or perceived self-efficacy of women with high parity, particularly around the continued importance of professional maternal care for every pregnancy (Fagbamigbe & Idemudia, 2016; Novignon et al., 2019).

Geographical disparities were particularly pronounced. Rural residence was negatively associated with all four maternal health indicators, reinforcing the persistent urban–rural divide in healthcare access. These findings mirror national surveys that identify transportation costs, facility distance, and shortages of qualified providers as key barriers in rural areas (Ebuehi & Akintujoye, 2012; Amo-Adjei et al., 2020; Aikpitanyi et al., 2024). Moreover, regional analyses showed that women in northern Nigeria, especially the North-East and North-West, were significantly less likely to access ANC, SBA, and contraceptives. These regions are also characterised by higher poverty levels, lower educational attainment, and security challenges, which collectively hinder healthcare delivery and utilisation (Alex-Ojei et al., 2023; Ahmed et al., 2018; Aikpitanyi et al., 2019).

The findings also highlight the impact of ethnicity and media exposure. Igbo and Yoruba women were more likely to use SBA and contraceptives compared to Hausa women, potentially reflecting divergent cultural norms, religious practices, and gender dynamics across ethnic groups. These results echo studies suggesting that cultural beliefs, gender power relations, and language barriers may shape women's attitudes and access to maternal health services (Al-Mujtaba et al., 2016; Doctor & Dahiru, 2010). Additionally, regular exposure to radio and television was positively associated with service use, emphasising the value of media-based health education campaigns in promoting behaviour change.

Policy implications

This study emphasises the significance of addressing both structural and social determinants of maternal health. First, targeted economic empowerment programs and social protection schemes for low-SES women could alleviate financial barriers to care. Second, region-specific strategies, particularly in the North-East and North-West, are needed to tackle both demand- and supply-side challenges, including insecurity, cultural resistance, and provider shortages.

Third, investments in female education and rural infrastructure remain foundational for long-term improvements in maternal health equity. Finally, integrating behavioural insights into maternal health messaging, primarily through mass media and community engagement, may help bridge the gap between knowledge and action, particularly in culturally diverse and underserved areas (Aikpitanyi & Guillon, 2025; Aikpitanyi et al., 2022).

Strengths and Limitations

A significant strength of this study lies in its large, nationally representative sample, which enhances the generalizability of the findings. The use of multivariate analysis also allows for robust adjustment of confounders. However, the cross-sectional nature of the data limits causal inference, and self-reported measures may be subject to recall and social desirability biases. Additionally, unobserved factors such as the quality of care, spousal influence, and perceived risk may also mediate the observed relationships.

Conclusion

This study provides robust empirical evidence that socioeconomic status (SES) significantly influences the utilisation of maternal health services in Nigeria. Women from higher SES groups consistently demonstrate greater use of antenatal care (ANC), skilled birth attendance (SBA), postnatal care (PNC), and modern contraceptive methods, even after controlling for other demographic and contextual factors. These findings highlight a persistent inequity in maternal healthcare access, suggesting that existing policies may not adequately reach the most vulnerable populations, particularly women with low SES.

In addition to SES, factors such as rural residence, limited exposure to media, high parity, and regional disparities further restrict women's access to essential maternal health services. This highlights the need for multisectoral strategies that consider both structural and sociocultural barriers. The study thus contributes to the growing body of literature on health inequities in sub-Saharan Africa by highlighting the compounded effects of socioeconomic disadvantage and providing new insights into underexplored determinants such as media exposure and parity.

To deepen understanding and support more effective interventions, future research should investigate context-specific and community-level barriers that may uniquely affect low-SES women's access to maternal care, and employ longitudinal or mixed-methods designs to uncover the causal mechanisms and lived experiences behind healthcare-seeking behaviours. Future research can also examine how intersecting factors, such as psychological dispositions, health literacy, and cultural norms, interact with SES to shape maternal health decisions, and evaluate the effectiveness of targeted pro-poor policies and community-based health initiatives in addressing these inequities, particularly in low-resource settings.

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