

Spatial Distribution and Sociodemographic Patterns of Unmet Need for Family Planning Among Rural Women in Nigeria

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Abstract

Unmet need for family planning remains an important reproductive health challenge in Nigeria, particularly among women living in rural communities. Understanding its spatial distribution and associated factors is essential for developing targeted family planning interventions. This study assessed the spatial distribution and factors associated with unmet need for family planning among women of reproductive age in rural Nigeria. Data were drawn from the Nigeria Demographic and Health Survey and included 13,444 rural women aged 15–49 years with complete information on unmet need. Survey weights, clustering and stratification were incorporated into the analysis. Spatial distribution was assessed across the six geopolitical zones and 37 states plus the Federal Capital Territory using weighted prevalence estimates. Chi-square tests and survey-weighted logistic regression were used to examine demographic, socioeconomic, cultural, health-service, family planning information and women's autonomy factors associated with unmet need. The weighted prevalence of unmet need was 25.3%. Prevalence varied from 22.2% in the North West to 30.0% in the South South and from 11.5% in Lagos to 40.3% in Enugu at state level. Women with more than four children were more likely to have unmet need than those with one or two children (AOR=1.98, 95% CI: 1.71–2.31, $p<0.001$), while women with higher education were less likely to have unmet need than those with no education (AOR=0.73, 95% CI: 0.56–0.95, $p<0.05$). Women whose husbands were employed had lower odds of unmet need (AOR=0.55, 95% CI: 0.46–0.65, $p<0.001$), whereas Yoruba women had higher odds than Hausa women (AOR=1.72, 95% CI: 1.42–2.08, $p<0.001$). Good access to health services was associated with higher odds of unmet need (AOR=1.13, 95% CI: 1.04–1.24, $p<0.05$), while exposure to family planning information and women's household and reproductive health decision-making autonomy were not significant after adjustment. Regional differences remained significant, with women in the South South having higher odds of unmet need than those in the North West (AOR=2.06, 95% CI: 1.67–2.54, $p<0.001$). The study demonstrates substantial spatial, demographic, socioeconomic and cultural differences in unmet need for family planning among rural women in Nigeria. Targeted and context-specific family planning interventions are needed, particularly in high-burden regions and among women with higher parity and limited educational opportunities.

Keywords: *Unmet need, spatial distribution rural women reproductive health sociodemographic determinants, Nigeria.*

1.0 Introduction

Unmet need for family planning is an important indicator of reproductive health, reflecting the gap between women's fertility intentions and their contraceptive use. It refers to the proportion of women who wish to delay or stop childbearing but are not using any method of contraception (WHO, 2018). Globally, an estimated 164 million women experience unmet need for family planning, with the burden disproportionately concentrated in low- and middle-income countries (UNFPA, 2022). The problem remains particularly pronounced in sub-Saharan Africa, where socioeconomic constraints, cultural norms, and limitations in health service delivery contribute to unmet reproductive health needs (UN, 2019). Rural women are especially vulnerable because of limited access to healthcare facilities, reduced exposure to family planning information, and sociocultural barriers that may discourage contraceptive use (Bongaarts et al., 2019; Ezeh et al., 2020). Nigeria reflects these regional challenges, with persistent disparities in contraceptive utilisation, particularly between rural and urban populations. Although awareness of contraception is relatively high, utilisation remains limited in many rural communities where health infrastructure is inadequate and socioeconomic deprivation is widespread (NDHS, 2018). Unmet need contributes to unintended pregnancies, unsafe abortions, and maternal health complications, with consequences for household welfare and national development (Cleland et al., 2018; Adebowale et al., 2021). The problem is influenced by interconnected demographic, socioeconomic, cultural, and health-service factors. Age, parity, education, household wealth, and marital status can shape reproductive preferences and contraceptive use (Ahmed et al., 2019). Cultural and religious beliefs may influence attitudes toward family planning, while women's limited autonomy in household and reproductive decision-making can constrain their ability to access and use contraceptives (Do et al., 2017; Okigbo et al., 2021). In addition, long distances to health facilities, limited availability of skilled providers and contraceptive commodities, inadequate counselling, and fear of side effects may further discourage utilisation (Babalola et al., 2017; FMOH, 2020).

An important but insufficiently understood dimension of unmet need is its spatial distribution. Reproductive health outcomes and service utilisation may vary geographically because of differences in infrastructure, socioeconomic conditions, cultural practices, and health system performance (World Bank, 2020). National averages can conceal substantial variations between states and geopolitical zones, limiting the ability of policymakers to identify high-burden areas and allocate resources effectively. Evidence of regional inequalities in Nigeria suggests that unmet need may exhibit distinct geographical patterns requiring locally responsive interventions (Akinyemi et al., 2022). Spatial analysis can therefore complement conventional statistical approaches by revealing geographical variations that may otherwise remain obscured.

Although previous studies have examined factors associated with unmet need for family planning in Nigeria, the available evidence has not sufficiently integrated spatial patterns with the demographic, socioeconomic, cultural, health-service, informational, and women's autonomy-related factors affecting rural populations. In particular, national and regional estimates may not adequately identify geographical differences in unmet need among rural women or clarify how these differences relate to individual and household characteristics (Akinyemi et al., 2022; Wegbom et al., 2026). This evidence gap limits the development of geographically targeted and context-specific interventions. Addressing it is important for

identifying high-burden areas, recognising population groups requiring additional support, and informing more equitable allocation of family planning resources. Improving access to family planning also contributes to broader development priorities, including Sustainable Development Goal 3 (Good Health and Well-being) and Sustainable Development Goal 5 (Gender Equality).

Against this background, this study aimed to examine the spatial patterns and determinants of unmet need for family planning among women of reproductive age in rural Nigeria. Specifically, it sought to examine the spatial distribution of unmet need for family planning across rural geopolitical zones in Nigeria, with particular attention to high-burden areas, and analyse demographic patterns associated with unmet need among rural women of reproductive age. Using data from the 2023–2024 Nigeria Demographic and Health Survey (NDHS), the study focused on rural women aged 15–49 years across Nigeria’s 36 states and the Federal Capital Territory. The findings are intended to inform targeted and context-specific family planning interventions for rural populations.

2.0 Methods and Materials

2.1 Study Area

Study Area

The study was conducted in rural areas across the 36 states of Nigeria and the Federal Capital Territory (FCT), covering the country’s six geopolitical zones: North Central, North East, North West, South East, South South, and South West. Nigeria is located in West Africa and comprises diverse geographical, socioeconomic, and cultural settings that may influence reproductive health behaviours and access to family planning services. The study focused on rural women aged 15–49 years, using data from the 2023–2024 Nigeria Demographic and Health Survey (NDHS). This geographical scope enabled the examination of variations in the spatial distribution of unmet need for family planning across rural geopolitical zones and the demographic patterns associated with the outcome.

2.2 Study Design

This study adopted a cross-sectional research design, utilizing secondary data obtained from the Nigeria Demographic and Health Survey (NDHS) 2023–24. The NDHS is a nationally representative household survey implemented by the National Population Commission (NPC) in collaboration with ICF, with technical and financial support from various international partners. The survey is designed to provide reliable and up-to-date information on key demographic and health indicators, including fertility, family planning, maternal and child health, and women’s empowerment in Nigeria.

2.3 Study Population

The study population for this research consist of women of reproductive age (15–49 years) captured in the Nigeria Demographic and Health Survey (NDHS) 2023–24. Specifically, the analysis will focus on women residing in selected households included in the survey sample. This will include both usual residents of the households and visitors who stayed in the households the night preceding the survey, in line with NDHS data collection procedures.

2.4 Inclusion and Exclusion Criteria

This study included women aged 15–49 years from the NDHS 2023–24 dataset who meet the following criteria:

2.4.1 Inclusion criteria:

- i. Women aged 15–49 years residing in rural areas at the time of the survey.
- ii. Women who are currently married/in union or sexually active.
- iii. Women with complete information on unmet need for family planning and key independent variables (demographic, socioeconomic, and health service-related factors).

2.4.2 Exclusion criteria:

- i. Women residing in urban areas.
- ii. Women with incomplete or missing data on key variables required for the analysis.

2.5 Sample Size and Sampling Technique

The Nigeria Demographic and Health Survey (NDHS) 2023–24 employ a stratified two-stage cluster sampling technique to obtain a nationally representative sample of households and individuals across Nigeria. The sampling frame for the survey is based on the most recent National Population Commission (NPC) master sampling frame, which is derived from the national population and housing census. The country is stratified by state and place of residence (urban and rural), resulting in a comprehensive sampling structure that ensures representation across all 36 states and the Federal Capital Territory (FCT).

In the first stage, a total of enumeration areas (EAs), which serve as primary sampling units (PSUs), are selected from each stratum using probability proportional to size (PPS). These EAs are geographically defined clusters that contain a specified number of households.

In the second stage, a systematic random sampling technique is used to select a fixed number of households from each selected EA. Typically, about 30 households per cluster are selected to ensure adequate representation.

The NDHS 2023–24 selected approximately 1,400 clusters (EAs) and about 42,000 households nationwide. From these households, eligible women aged 15–49 years were identified and interviewed using standardized questionnaires. The survey achieved a high response rate, ensuring the reliability and representativeness of the data.

For the purpose of this study, the analytical sample will be restricted to women of reproductive age (15–49 years) residing in rural areas, in line with the study objectives.

2.6 Data Collection Instrument

The NDHS 2023–24 utilizes a set of standardized questionnaires designed to collect comprehensive demographic and health-related data. For the purpose of this study, data was extracted primarily from the Women's Questionnaire, which gathers detailed information from women aged 15–49 years.

The key domains covered in the survey instrument include:

- Background characteristics (age, marital status, education, employment, and media exposure)
- Reproductive history (fertility preferences, birth history, and birth intervals)
- Family planning (knowledge, use, sources, and unmet need for contraception)
- Maternal health (antenatal care, delivery, and postnatal services)
- Child health and survival
- Household characteristics (wealth index, residence, and environmental conditions)

These modules collectively provide the necessary variables required to examine the determinants and patterns of unmet need for family planning among rural women.

2.7 Data Collection Procedure

This study employed a quantitative analytical approach using secondary data obtained from the Nigeria Demographic and Health Survey (NDHS) 2023–24. The NDHS is a nationally representative household survey implemented by the National Population Commission (NPC) in collaboration with ICF International and other development partners, including USAID, UNFPA, and UNICEF. The survey is part of the global Demographic and Health Survey (DHS) programme, which provides high-quality, comparable data on population, health, and nutrition indicators across developing countries. The NDHS 2023–24 was served as the primary data source for this study due to its comprehensive coverage of reproductive health indicators, including fertility behavior, contraceptive use, unmet need for family planning, maternal health, and child health outcomes. The survey employs standardized questionnaires, rigorous sampling procedures, and advanced data collection techniques, ensuring high reliability and comparability of results across regions and time periods. Data collection in the NDHS is typically conducted using structured, pre-tested questionnaires administered through face-to-face interviews by trained fieldworkers. In the 2023–24 round, electronic data collection methods (Computer-Assisted Personal Interviewing – CAPI) was utilized to enhance data accuracy, reduce entry errors, and improve real-time monitoring. The survey captures detailed information on women of reproductive age (15–49 years), men, children, and households, thereby providing a rich dataset suitable for analyzing unmet need for family planning among rural women.

The NDHS dataset is particularly appropriate for this study because it allows for disaggregation by key variables such as place of residence (urban/rural), region, socioeconomic status, and educational attainment. This enables a nuanced examination of disparities in unmet need for family planning across different population subgroups in Nigeria.

2.8 Validity and Reliability of the Instrument

2.8.1 Validity of the Instrument

The validity of the NDHS 2023–24 instruments is well established. The questionnaires are developed through extensive international collaboration and are based on globally accepted standards for demographic and health measurement. Prior to data collection, the instruments undergo rigorous processes including translation into local languages, back-translation, and pre-testing to ensure clarity, cultural appropriateness, and contextual relevance.

Content and face validity are ensured through reviews by experts in demography, public health, and survey methodology from organizations such as the National Population Commission (NPC), ICF International, and other international partners. These experts assess whether the survey items adequately capture the constructs they are intended to measure, particularly in areas such as reproductive health and family planning.

Furthermore, the NDHS employs standardized definitions and indicators (e.g., unmet need for family planning, contraceptive prevalence rate), which enhances comparability across countries and over time. The use of validated instruments and internationally recognized methodologies strengthens the credibility of the data and supports its suitability for academic research and policy analysis.

2.8.2 Reliability of the Instrument

Reliability of the NDHS data was ensured through several quality control measures implemented during data collection. These include intensive training of fieldworkers, field supervision, real-time data monitoring, and consistency checks embedded within the CAPI system. In addition,

standardized procedures are followed across all survey locations, minimizing interviewer bias and ensuring uniformity in data collection. The large sample size and high response rates further enhance the statistical reliability and generalizability of the findings. Overall, the NDHS 2023–24 provides a robust, reliable, and valid dataset suitable for examining unmet need for family planning among rural women in Nigeria.

2.9 Data Analysis

Data extracted from the Nigeria Demographic and Health Survey (NDHS) 2023–24 will undergo thorough editing, cleaning, and consistency checks to ensure accuracy and completeness prior to analysis. The analysis will be conducted using Stata version 18 SE, R (latest version), and QGIS for spatial analysis. The dataset will be appropriately recoded and weighted in accordance with DHS guidelines to account for the complex survey design, including stratification, clustering, and sampling weights. Variables will be coded and categorized based on the study objectives, with particular emphasis on unmet need for family planning as the main outcome variable. The cleaned and coded dataset will then be used to generate descriptive, inferential, and spatial results for the study.

2.10 Ethical Considerations

This study utilizes secondary data obtained from the Nigeria Demographic and Health Survey (NDHS) 2023–24, which is publicly available upon request from the DHS Program. Ethical approval for the original data collection was obtained by the National Population Commission (NPC) in collaboration with ICF International and relevant national ethical review bodies. Informed consent was obtained from all respondents prior to data collection, and strict confidentiality protocols were maintained throughout the survey process.

Permission to use the NDHS dataset for this study was obtained through formal application to the DHS Program. The data will be used strictly for academic purposes, and no attempt will be made to identify individual respondents. All analyses will adhere to ethical standards for secondary data use, ensuring privacy, confidentiality, and responsible reporting of findings.

3.0 Results/Findings

Socio-demographic, Household and Reproductive Characteristics of Rural Women Respondents

The respondents had diverse sociodemographic and reproductive characteristics. Women aged 30–39 years constituted the largest age group (26.66%), while 48.51% had no formal education and 6.48% had higher education. Similarly, 49.55% reported that their spouses had no formal education. Most respondents made healthcare decisions jointly with their spouses (76.75%), were unexposed to media (56.70%), identified as other Christians (88.85%), and were living with a spouse (73.31%). Regarding household characteristics, 58.40% belonged to the lowest wealth category, while 19.82% belonged to the richest category. More than half of the respondents were employed (53.20%), and 94.30% reported that their spouses were employed. Most respondents lived in male-headed households (85.56%). Regarding reproductive characteristics, 40.03% had more than four children ever born, while the same proportion reported a fifth or higher birth order. Most respondents reported that their last child was wanted at the time of pregnancy (88.18%). Health insurance coverage was very low, with only 1.26% of respondents reporting enrolment. Regarding antenatal care (ANC), 37.32% had no visits, 21.11% had 1–3 visits, 32.65% had 4–7 visits, and 8.92% had eight or more visits. Geographically, the North West

contributed the largest proportion of respondents (32.59%), while the South West contributed the smallest (4.02%).

Table 1: Socio-demographic, Household and Reproductive Characteristics of Rural Women Respondents

Variables	Frequency (n)	Percentage (%)
Age group (years)		
15–19	4,055	20.14
20–24	3,617	17.97
25–29	3,441	17.09
30–39	5,367	26.66
40–49	3,650	18.13
Highest educational level		Ygt
No education	9,766	48.51
Primary	2,538	12.61
Secondary	6,522	32.40
Higher	1,304	6.48
Spouse's highest educational level		
No education	7,313	49.55
Primary	1,667	11.30
Secondary	4,016	27.21
Higher	1,558	10.56
Don't know	204	1.38
Who decides respondent's healthcare		
Respondent alone	1,391	23.25
Respondent and spouse	4,593	76.75
Media exposure		
Unexposed to media	11,414	56.70
Exposed to media	8,716	43.30
Religion		
Islam	2,078	10.32
Other Christians	17,886	88.85
Others	166	0.82
Marital status		
Never married	4,502	22.36
Living with a spouse	14,758	73.31
Widowed/Divorced/Separated	870	4.32
Household wealth status		
Lowest	11,756	58.40
Middle	4,385	21.78
Richest	3,989	19.82
Children ever-born		
1 or 2 births	4,515	30.53
3 or 4 births	4,355	29.44
More than 4 births	5,921	40.03
Birth order		

First	2,299	15.54
Second	2,216	14.98
Third	2,239	15.14
Fourth	2,116	14.31
Fifth or higher	5,921	40.03
Birth interval		
First birth	2,299	100.00
Current employment status		
Unemployed	9,421	46.80
Employed	10,709	53.20
Spouse's current employment status		
Unemployed	841	5.70
Employed	13,917	94.30
Sex of household head		
Male	17,223	85.56
Female	2,907	14.44
Wanted last child		
Then	7,637	88.18
Later	740	8.54
Never	284	3.28
Health insurance		
No	19,877	98.74
Yes	253	1.26
Number of ANC visits		
No ANC visits	3,181	37.32
1–3	1,799	21.11
4–7	2,783	32.65
8+	760	8.92
Zone		
North west	6,561	32.59
North east	4,196	20.84
North central	4,598	22.84
South east	2,536	12.60
South south	1,430	7.10
South west	809	4.02

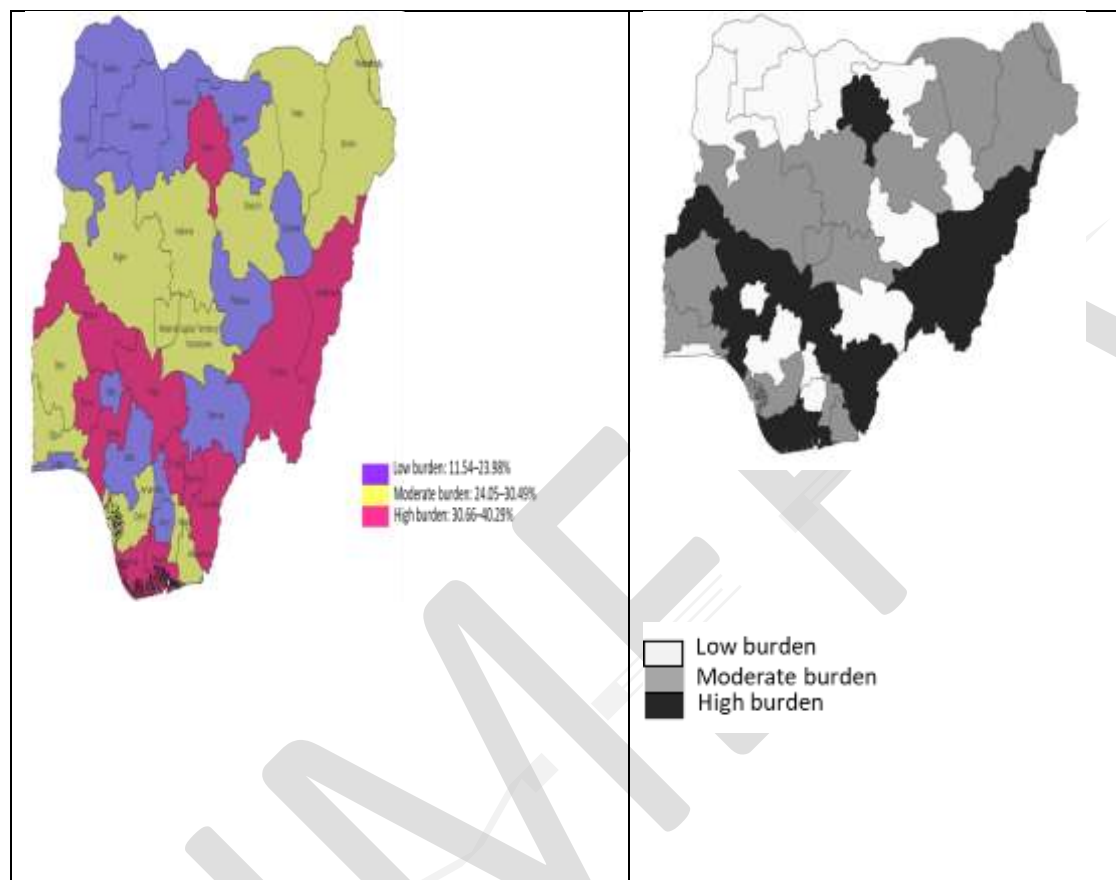
Spatial distribution of unmet need for family planning among women of reproductive in Nigeria.

The spatial distribution of unmet need for family planning among rural women in Nigeria varied considerably across states, ranging from 11.54% in Lagos to 40.29% in Enugu. The lowest rates were recorded in Lagos (11.54%), Sokoto (12.72%), and Ekiti (13.28%). Other states with relatively low rates included Anambra (15.05%), Jigawa (15.41%), Plateau (17.26%), Gombe (18.27%), Katsina (18.98%), Zamfara (19.80%), Imo (20.03%), Edo (23.26%), Benue (23.64%), and Kebbi (23.98%).

Moderate levels of unmet need were observed in Delta (24.05%), Nasarawa (24.72%), Bauchi

(25.57%), Yobe (25.69%), the Federal Capital Territory (25.81%), Kaduna (25.83%), Akwa Ibom (26.01%), Abia (28.74%), Borno (28.87%), Niger (29.05%), Oyo (29.18%), and Ogun (30.49%).

The highest rates were recorded in Enugu (40.29%), Bayelsa (38.90%), Kwara (38.66%), Ebonyi (37.33%), Cross River (36.42%), Taraba (35.63%), Osun (35.23%), and Ondo



(34.25%). Other states in this group included Kano (31.09%), Kogi (30.96%), Adamawa (30.74%), and Rivers (30.66%). Overall, the findings demonstrate substantial geographical variation in unmet need for family planning among rural women in Nigeria, with Enugu recording the highest rate and Lagos the lowest.

Figure 1: Spatial distribution of unmet need for family planning among women of reproductive in Nigeria.

Spatial Distribution of Unmet Need for Family Planning Across Geopolitical Zones

The spatial distribution of unmet need for family planning among rural women varied across Nigeria's six geopolitical zones, ranging from 22.17% in the North West to 29.97% in the South South. The North West recorded the lowest proportion (22.17%) and was classified as having a low burden, followed by North Central at 26.38%, also classified as low burden.

The North East and South East recorded moderate levels of unmet need, at 27.18% and 27.62%, respectively. In the southern region, the South West recorded a high burden of 28.49%, while the South South had the highest proportion of unmet need at 29.97% and was also classified as high burden. Overall, the findings demonstrate geographical differences in unmet need for family

planning across rural Nigeria, with the highest proportion observed in the South South and the lowest in the North West.

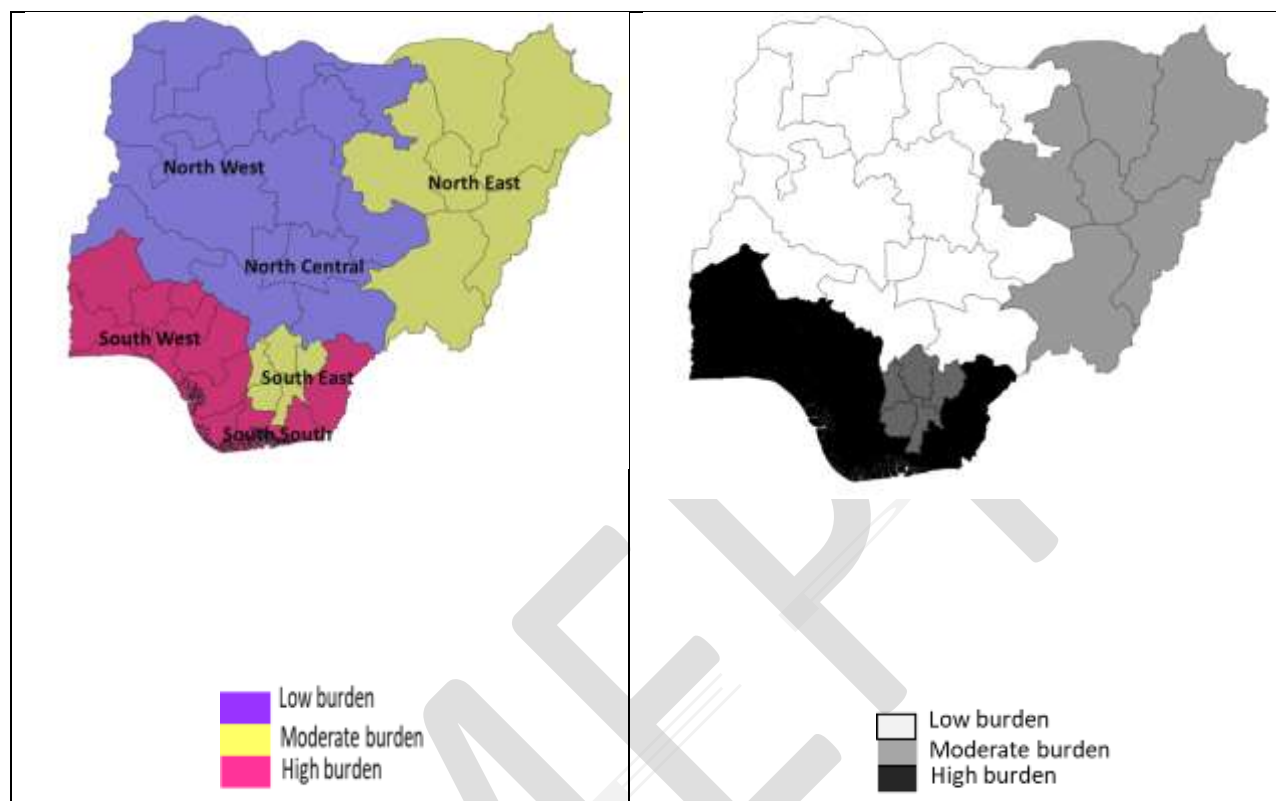


Fig 2: Spatial distribution of unmet need for family planning among women of reproductive across the zones in Nigeria.

Distribution of Unmet Need for Family Planning in the North West

Unmet need for family planning varied across states and demographic groups in the North West. Kano recorded the highest proportion (31.09%; 95% CI: 27.05–35.43%), while Sokoto had the lowest (12.72%; 95% CI: 9.30–17.15%). By age, unmet need was highest among women aged 40–49 years (42.66%; 95% CI: 37.55–47.94%) and lowest among those aged 15–19 years (12.63%; 95% CI: 9.29–16.95%). Women with primary education had the highest proportion by educational attainment (27.28%), while never-married women had the highest proportion by marital status (36.12%; 95% CI: 11.79–70.52%).

Regarding reproductive characteristics, women with more than four children ever born had a higher proportion of unmet need (30.55%; 95% CI: 27.99–33.23%) than those with one or two children (18.49%). The proportions were similar among employed and unemployed women (22.37% and 22.01%, respectively). Women exposed to media had a higher proportion than those unexposed (24.42% vs. 21.37%), while the proportions among women with and without health insurance were 23.98% and 22.15%, respectively.

Table 2: Unmet Need for Family Planning by Selected Background Characteristics in North West Nigeria

Characteristic	No unmet need n (%)	Unmet need n (%)	95% CI for Unmet Need
State			
Jigawa	653 (84.59)	119 (15.41)	12.32–19.10
Kaduna	473 (74.17)	164 (25.83)	22.03–30.03
Kano	458 (68.91)	206 (31.09)	27.05–35.43
Katsina	486 (81.02)	114 (18.98)	15.96–22.41
Kebbi	568 (76.02)	179 (23.98)	20.38–27.99
Sokoto	702 (87.28)	102 (12.72)	9.30–17.15
Zamfara	386 (80.20)	95 (19.80)	15.18–25.39
Age (years)			
15–19	512 (87.37)	74 (12.63)	9.29–16.95
20–24	842 (81.84)	187 (18.16)	15.45–21.21
25–29	906 (81.29)	209 (18.71)	16.09–21.63
30–39	1,093 (76.52)	336 (23.48)	20.95–26.20
40–49	313 (57.34)	233 (42.66)	37.55–47.94
Education			
No education	2,913 (78.88)	780 (21.12)	19.42–22.92
Primary	291 (72.72)	109 (27.28)	22.38–32.80
Secondary	392 (75.61)	127 (24.39)	19.27–30.35
Higher	73 (78.98)	20 (21.02)	12.13–33.92
Marital status			
Never married	10 (63.88)	6 (36.12)	11.79–70.52
Living with a spouse	3,621 (77.91)	1,027 (22.09)	20.46–23.80
Widowed/Divorced/Sepa- rated	30 (72.69)	11 (27.31)	15.72–43.08
Wealth status			
Lowest	2,817 (78.40)	775 (21.60)	19.88–23.42
Middle	590 (76.26)	183 (23.74)	19.81–28.17
Richest	260 (76.50)	80 (23.50)	18.08–29.95
Children ever-born			
1 or 2 births	1,083 (81.51)	246 (18.49)	16.16–21.08
3 or 4 births	958 (81.92)	211 (18.08)	15.48–21.00
More than 4 births	1,260 (69.45)	554 (30.55)	27.99–33.23
Employment			
Unemployed	2,142 (77.99)	605 (22.01)	19.81–24.39
Employed	1,521 (77.63)	438 (22.37)	20.46–24.40
Media exposure			
Unexposed to media	2,828 (78.63)	769 (21.37)	19.46–23.42
Exposed to media	837 (75.58)	271 (24.42)	21.52–27.57
Health insurance			
No	3,620 (77.85)	1,030 (22.15)	20.56–23.83
Yes	42 (76.02)	13 (23.98)	12.44–41.17

Distribution of Unmet Need for Family Planning in North Central Nigeria

Unmet need for family planning varied across states and demographic groups in North Central Nigeria. Kwara recorded the highest proportion (38.66%; 95% CI: 32.46–45.24%), while Plateau had the lowest (17.26%; 95% CI: 13.95–21.18%). By age, the proportion was highest among women aged 40–49 years (34.82%; 95% CI: 28.54–41.68%) and lowest among those aged 20–24 years (19.68%; 95% CI: 16.47–23.34%). Women with no formal education had a higher proportion of unmet need (28.96%) than those with higher education (17.84%). Similarly, unmet need was highest among widowed, divorced, or separated women (35.25%) and lowest among women living with a spouse (25.75%).

Regarding reproductive characteristics, women with more than four children ever born recorded the highest proportion of unmet need (37.49%; 95% CI: 33.11–42.09%), compared with 26.98% among those with three or four children and 22.77% among those with one or two children. Unemployed women had a higher proportion than employed women (28.27% vs. 25.34%). The proportions were similar among women exposed and unexposed to media (26.56% vs. 26.15%), while women without health insurance recorded a higher proportion than those with insurance (26.51% vs. 18.30%).

Table 3: Unmet Need for Family Planning among Women in the North Central

Characteristic	No unmet need n (%)	Unmet need n (%)	95% CI for Unmet Need
State			
FCT-Abuja	147 (74.19)	51 (25.81)	19.17–33.80
Benue	320 (76.36)	99 (23.64)	18.57–29.59
Kogi	268 (69.04)	120 (30.96)	25.60–36.89
Kwara	221 (61.34)	140 (38.66)	32.46–45.24
Nasarawa	315 (75.28)	104 (24.72)	21.23–28.57
Niger	373 (70.95)	153 (29.05)	25.84–32.49
Plateau	556 (82.74)	116 (17.26)	13.95–21.18
Age (years)			
15–19	196 (74.31)	68 (25.69)	18.55–34.41
20–24	536 (80.32)	131 (19.68)	16.47–23.34
25–29	540 (75.49)	175 (24.51)	21.50–27.79
30–39	693 (70.26)	293 (29.74)	25.65–34.19
40–49	229 (65.18)	122 (34.82)	28.54–41.68
Education			
No education	877 (71.04)	358 (28.96)	26.57–31.48
Primary	369 (75.24)	122 (24.76)	20.67–29.37
Secondary	716 (74.38)	246 (25.62)	22.46–29.06
Higher	243 (82.16)	52 (17.84)	13.38–23.38
Marital status			
Never married	146 (66.76)	73 (33.24)	24.49–43.32
Living with a spouse	2,018 (74.25)	701 (25.75)	23.85–27.75
Widowed/Divorced/Separated	29 (64.75)	16 (35.25)	20.28–53.80
Household wealth status			
Lowest	1,247 (73.41)	452 (26.59)	24.04–29.30
Middle	512 (73.31)	186 (26.69)	23.16–30.55

Richest	437 (74.63)	149 (25.37)	20.65–30.76
Children ever-born			
1 or 2 births	738 (77.23)	217 (22.77)	20.05–25.74
3 or 4 births	640 (73.02)	237 (26.98)	24.09–30.09
More than 4 births	449 (62.51)	270 (37.49)	33.11–42.09
Current employment status			
Unemployed	747 (71.73)	294 (28.27)	24.28–32.64
Employed	1,450 (74.66)	492 (25.34)	23.10–27.71
Media exposure			
Unexposed to media	980 (73.85)	347 (26.15)	23.77–28.69
Exposed to media	1,216 (73.44)	440 (26.56)	23.65–29.69
Health insurance			
No	2,155 (73.49)	777 (26.51)	24.62–28.50
Yes	42 (81.70)	9 (18.30)	8.13–36.19

Distribution of Unmet Need for Family Planning in North East Nigeria

Unmet need for family planning varied across states and demographic groups in North East Nigeria. Taraba recorded the highest proportion (35.63%; 95% CI: 31.15–40.38%), while Gombe had the lowest (18.27%; 95% CI: 15.44–21.48%). By age, unmet need was highest among women aged 40–49 years (38.73%; 95% CI: 32.65–45.19%) and lowest among those aged 25–29 years (23.44%; 95% CI: 19.65–27.70%). Women with primary education recorded the highest proportion by educational attainment (30.84%), while those with higher education had the lowest (22.04%). Never-married women had the highest proportion by marital status (50.53%; 95% CI: 40.70–60.31%), compared with 26.23% among women living with a spouse.

Regarding reproductive characteristics, women with more than four children ever born recorded the highest proportion of unmet need (31.41%; 95% CI: 27.33–35.79%), compared with 24.81% among those with three or four children and 23.74% among those with one or two children. Employed women had a higher proportion than unemployed women (29.00% vs. 25.85%). Women unexposed to media also had a higher proportion than those exposed (28.15% vs. 24.32%). Unmet need was 35.46% among women with health insurance and 27.09% among those without insurance.

Table 4: Unmet Need for Family Planning by Selected Background Characteristics in North East Nigeria

Characteristic	No unmet need n (%)	Unmet need n (%)	95% CI for Unmet Need
State			
Adamawa	395 (69.26)	176 (30.74)	26.21–35.66
Bauchi	506 (74.43)	174 (25.57)	20.98–30.78
Borno	97 (71.13)	39 (28.87)	24.21–34.01
Gombe	461 (81.73)	103 (18.27)	15.44–21.48
Taraba	274 (64.37)	151 (35.63)	31.15–40.38
Yobe	395 (74.31)	136 (25.69)	20.93–31.11
Age (years)			
15–19	211 (74.67)	72 (25.33)	17.78–34.74
20–24	472 (73.71)	168 (26.29)	22.50–30.47

25–29	498 (76.56)	153 (23.44)	19.65–27.70
30–39	709 (73.60)	255 (26.40)	22.80–30.34
40–49	226 (61.27)	143 (38.73)	32.65–45.19
Education			
No education	1,506 (73.70)	536 (26.30)	23.66–29.11
Primary	181 (69.16)	81 (30.84)	24.14–38.46
Secondary	358 (70.25)	152 (29.75)	25.78–34.05
Higher	74 (77.96)	21 (22.04)	14.10–32.73
Marital status			
Never married	63 (49.47)	64 (50.53)	40.70–60.31
Living with a spouse	2,018 (73.77)	718 (26.23)	23.85–28.76
Widowed/Divorced/Separated	36 (84.04)	7 (15.96)	6.64–33.65
Wealth status			
Lowest	1,669 (72.26)	641 (27.74)	25.53–30.06
Middle	290 (73.98)	102 (26.02)	19.72–33.50
Richest	156 (76.34)	48 (23.66)	17.53–31.13
Children ever-born			
1 or 2 births	573 (76.26)	178 (23.74)	19.93–28.03
3 or 4 births	560 (75.19)	185 (24.81)	19.58–30.91
More than 4 births	778 (68.59)	356 (31.41)	27.33–35.79
Employment			
Unemployed	1,190 (74.15)	414 (25.85)	23.24–28.65
Employed	925 (71.00)	378 (29.00)	25.59–32.66
Media exposure			
Unexposed to media	1,581 (71.85)	619 (28.15)	25.82–30.61
Exposed to media	535 (75.68)	172 (24.32)	19.87–29.41
Health insurance			
No	2,097 (72.91)	780 (27.09)	24.78–29.54
Yes	19 (64.54)	11 (35.46)	22.98–50.29

Distribution of Unmet Need for Family Planning in South East Nigeria

Unmet need for family planning varied across states and demographic groups in South East Nigeria. Enugu recorded the highest proportion (40.29%; 95% CI: 28.02–53.90%), followed by Ebonyi (37.33%; 95% CI: 32.19–42.77%), while Anambra had the lowest (15.05%; 95% CI: 10.90–20.41%). By age, unmet need was highest among women aged 15–19 years (49.36%; 95% CI: 33.71–65.15%) and lowest among those aged 25–29 years (23.70%; 95% CI: 19.03–29.11%). The proportion decreased with increasing educational attainment, from 57.42% among women with no formal education to 14.92% among those with higher education. Women living with a spouse recorded a slightly higher proportion (28.10%) than never-married women (25.92%) and widowed, divorced, or separated women (22.11%).

Regarding household and reproductive characteristics, unmet need was highest among women in the lowest wealth category (37.40%; 95% CI: 32.08–43.04%) and lowest among those in the richest category (21.69%; 95% CI: 18.32–25.49%). Women with more than four children ever born had a higher proportion of unmet need (37.97%; 95% CI: 33.03–43.17%) than those with one or two children (22.43%; 95% CI: 19.16–26.09%). Unemployed women had a higher proportion than employed women (30.81% vs. 26.72%), while women unexposed to media

recorded a higher proportion than those exposed (36.46% vs. 24.51%). Unmet need was also higher among women without health insurance than among those with insurance (27.90% vs. 14.94%).

Table 5: Unmet Need for Family Planning among Women in the South East

Characteristic	No unmet need n (%)	Unmet need n (%)	95% CI for Unmet Need
State			
Abia	149 (71.26)	60 (28.74)	23.85–34.19
Anambra	212 (84.95)	38 (15.05)	10.90–20.41
Ebonyi	281 (62.67)	168 (37.33)	32.19–42.77
Enugu	70 (59.71)	48 (40.29)	28.02–53.90
Imo	338 (79.97)	85 (20.03)	16.31–24.36
Age (years)			
15–19	22 (50.64)	21 (49.36)	33.71–65.15
20–24	166 (72.64)	63 (27.36)	21.53–34.07
25–29	229 (76.30)	71 (23.70)	19.03–29.11
30–39	417 (73.37)	151 (26.63)	22.66–31.02
40–49	215 (69.44)	94 (30.56)	25.26–36.43
Education			
No education	14 (42.58)	20 (57.42)	39.64–73.46
Primary	140 (63.33)	81 (36.67)	28.52–45.65
Secondary	688 (72.69)	258 (27.31)	24.34–30.51
Higher	211 (85.08)	37 (14.92)	10.98–19.96
Marital status			
Never married	147 (74.08)	51 (25.92)	19.75–33.23
Living with a spouse	866 (71.90)	338 (28.10)	25.27–31.11
Widowed/Divorced/Separated	37 (77.89)	10 (22.11)	11.00–39.45
Household wealth status			
Lowest	171 (62.60)	102 (37.40)	32.08–43.04
Middle	278 (68.74)	126 (31.26)	26.43–36.54
Richest	605 (78.31)	167 (21.69)	18.32–25.49
Children ever-born			
1 or 2 births	284 (77.57)	82 (22.43)	19.16–26.09
3 or 4 births	319 (73.76)	113 (26.24)	21.33–31.83
More than 4 births	267 (62.03)	164 (37.97)	33.03–43.17
Current employment status			
Unemployed	213 (69.19)	95 (30.81)	25.47–36.73
Employed	836 (73.28)	305 (26.72)	23.76–29.91
Media exposure			
Unexposed to media	222 (63.54)	127 (36.46)	31.60–41.61
Exposed to media	830 (75.49)	270 (24.51)	21.63–27.63
Health insurance			
No	1,022 (72.10)	396 (27.90)	25.29–30.67
Yes	26 (85.06)	5 (14.94)	5.98–32.66

Distribution of Unmet Need for Family Planning in South South Nigeria

Unmet need for family planning varied across states and demographic groups in South South Nigeria. Bayelsa recorded the highest proportion (38.90%; 95% CI: 31.78–46.52%), followed by Cross River (36.42%; 95% CI: 28.41–45.25%), while Edo had the lowest (23.26%; 95% CI: 13.34–37.38%). By age, unmet need was highest among women aged 15–19 years (36.09%; 95% CI: 23.33–51.18%) and lowest among those aged 30–39 years (24.42%; 95% CI: 19.20–30.53%). The proportion was highest among women with no formal education (60.17%; 95% CI: 40.25–77.21%) and lowest among those with higher education (24.91%; 95% CI: 17.35–34.38%). Never-married women recorded a proportion of 30.96%, compared with 30.37% among women living with a spouse and 22.19% among widowed, divorced, or separated women. Regarding household and reproductive characteristics, unmet need was highest among women in the lowest wealth category (35.70%; 95% CI: 26.43–46.17%) and lowest among those in the richest category (26.78%; 95% CI: 22.57–31.46%). Women with three or four children ever born recorded the highest proportion (35.31%; 95% CI: 28.94–42.25%), compared with 26.36% among those with one or two children. Unemployed women had a higher proportion than employed women (35.77% vs. 28.27%). The proportions were similar among women unexposed and exposed to media (31.24% vs. 29.64%). Unmet need was higher among women without health insurance than among those with insurance (30.32% vs. 9.99%), although the estimate for insured women was imprecise (95% CI: 1.30–48.34%).

Table 6: Unmet Need for Family Planning among Women in South South Nigeria

Characteristic	No Unmet Need n (%)	Unmet Need n (%)	95% CI for Unmet Need
State			
Akwa Ibom	149 (73.99)	53 (26.01)	19.92–33.19
Bayelsa	108 (61.10)	69 (38.90)	31.78–46.52
Cross River	146 (63.58)	84 (36.42)	28.41–45.25
Delta	71 (75.95)	23 (24.05)	16.95–32.93
Edo	53 (76.74)	16 (23.26)	13.34–37.38
Rivers	77 (69.34)	34 (30.66)	22.62–40.08
Age (years)			
15–19	47 (63.91)	27 (36.09)	23.33–51.18
20–24	113 (64.81)	61 (35.19)	28.24–42.82
25–29	110 (68.50)	51 (31.50)	23.92–40.21
30–39	244 (75.58)	79 (24.42)	19.20–30.53
40–49	104 (68.87)	47 (31.13)	24.38–38.79
Education			
No education	12 (39.83)	19 (60.17)	40.25–77.21
Primary	98 (70.63)	41 (29.37)	22.95–36.72
Secondary	440 (70.28)	186 (29.72)	25.66–34.14
Higher	65 (75.09)	22 (24.91)	17.35–34.38
Marital status			
Never married	115 (69.04)	51 (30.96)	23.10–40.10
Living with a spouse	466 (69.63)	203 (30.37)	26.51–34.54
Widowed/Divorced/Separated	37 (77.81)	11 (22.19)	11.72–37.99
Wealth status			

Lowest	113 (64.30)	63 (35.70)	26.43–46.17
Middle	243 (69.09)	109 (30.91)	26.09–36.18
Richest	260 (73.22)	95 (26.78)	22.57–31.46
Children ever-born			
1 or 2 births	208 (73.64)	74 (26.36)	20.65–32.98
3 or 4 births	157 (64.69)	86 (35.31)	28.94–42.25
More than 4 births	138 (68.97)	62 (31.03)	24.59–38.31
Employment			
Unemployed	126 (64.23)	70 (35.77)	28.85–43.34
Employed	493 (71.73)	194 (28.27)	24.49–32.38
Media exposure			
Unexposed to media	147 (68.76)	67 (31.24)	24.46–38.93
Exposed to media	470 (70.36)	199 (29.64)	26.05–33.50
Health insurance			
No	606 (69.68)	264 (30.32)	26.95–33.91
Yes	12 (90.01)	1 (9.99)	1.30–48.34

Distribution of Unmet Need for Family Planning in South West Nigeria

Unmet need for family planning varied across states and demographic groups in South West Nigeria. Osun recorded the highest proportion (35.23%; 95% CI: 28.04–43.16%), followed by Ondo (34.25%; 95% CI: 28.04–41.06%), while Lagos had the lowest (11.54%; 95% CI: 3.08–34.84%). By age, unmet need was highest among women aged 30–39 years (35.14%; 95% CI: 27.71–43.37%) and lowest among those aged 20–24 years (22.86%; 95% CI: 14.81–33.57%). The proportion declined with increasing educational attainment, from 36.56% among women with no formal education to 18.83% among those with higher education. Women living with a spouse recorded a higher proportion (30.60%) than never-married women (14.32%); no unmet need was recorded among widowed, divorced, or separated women. Regarding household and reproductive characteristics, unmet need was highest among women in the lowest wealth category (36.33%; 95% CI: 29.52–43.75%) and lowest among those in the richest category (23.18%; 95% CI: 17.79–29.60%). Women with more than four children ever born recorded the highest proportion (45.62%; 95% CI: 36.99–54.52%), compared with 23.19% among those with one or two children. The proportions were similar among employed and unemployed women (28.76% vs. 27.35%) and were slightly higher among women unexposed to media than those exposed (31.18% vs. 27.39%). Unmet need was 28.61% among women without health insurance, while none was recorded among insured women.

Table 7: Unmet Need for Family Planning among Women in South West Nigeria

Characteristic	No Unmet Need n (%)	Unmet Need n (%)	95% CI for Unmet Need
State			
Ekiti	71 (86.72)	11 (13.28)	7.70–21.93
Lagos	22 (88.46)	3 (11.54)	3.08–34.84
Ogun	66 (69.51)	29 (30.49)	17.61–47.38
Ondo	88 (65.75)	46 (34.25)	28.04–41.06
Osun	31 (64.77)	17 (35.23)	28.04–43.16
Oyo	94 (70.82)	39 (29.18)	19.85–40.67

Age (years)			
15–19	29 (74.45)	10 (25.55)	9.01–54.31
20–24	76 (77.14)	22 (22.86)	14.81–33.57
25–29	73 (76.69)	22 (23.31)	15.33–33.80
30–39	120 (64.86)	65 (35.14)	27.71–43.37
40–49	72 (72.15)	28 (27.85)	16.94–42.21
Education			
No education	70 (63.44)	40 (36.56)	27.33–46.91
Primary	74 (71.55)	29 (28.45)	20.33–38.25
Secondary	183 (73.72)	65 (26.28)	17.56–37.36
Higher	45 (81.17)	11 (18.83)	7.69–39.23
Marital status			
Never married	44 (85.68)	7 (14.32)	6.56–28.47
Living with a spouse	315 (69.40)	139 (30.60)	25.59–36.13
Widowed/Divorced/Separated	12 (100.00)	0 (0.00)	—
Wealth status			
Lowest	99 (63.67)	56 (36.33)	29.52–43.75
Middle	124 (73.55)	45 (26.45)	20.05–34.03
Richest	148 (76.82)	45 (23.18)	17.79–29.60
Children ever-born			
1 or 2 births	118 (76.81)	35 (23.19)	16.42–31.70
3 or 4 births	118 (70.86)	48 (29.14)	19.55–41.03
More than 4 births	65 (54.38)	54 (45.62)	36.99–54.52
Employment			
Unemployed	63 (72.65)	24 (27.35)	16.77–41.30
Employed	306 (71.24)	124 (28.76)	23.54–34.61
Media exposure			
Unexposed to media	105 (68.82)	47 (31.18)	23.81–39.65
Exposed to media	265 (72.61)	100 (27.39)	21.05–34.80
Health insurance			
No	367 (71.39)	147 (28.61)	23.39–34.48
Yes	3 (100.00)	0 (0.00)	—

Spatial Distribution of unmet need for family planning among women of reproductive in Northern and southern Nigeria.

The spatial distribution of unmet need for family planning among rural women showed a higher proportion in Southern Nigeria (28.51%) compared with Northern Nigeria (24.33%). The difference indicates a 4.18 percentage-point higher proportion of unmet need in the South than in the North.

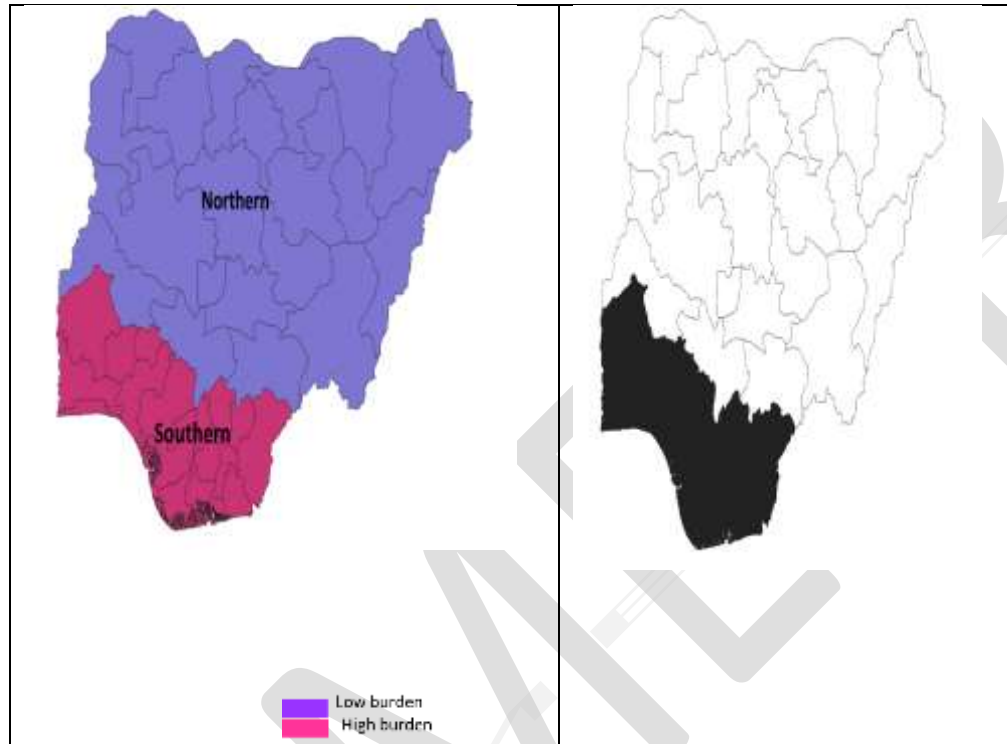


Figure 4.3: Spatial Distribution of unmet need for family planning among women of reproductive in Northern and southern Nigeria.

Distribution of Unmet Need for Family Planning in Northern and Southern Nigeria

Unmet need for family planning differed between Northern and Southern Nigeria across demographic groups. Among women aged 15–19 years, the proportion was higher in the South than in the North (36.20% vs. 17.90%). In the North, it peaked among women aged 40–49 years (39.96%), while in the South, it was highest among those aged 15–19 years. Women with no formal education recorded the highest proportion in the South (42.70%), whereas women with primary education had the highest in the North (27.15%). In both regions, unmet need increased with the number of children ever born, reaching 31.94% in the North and 37.81% in the South among women with more than four children.

Wealth-related differences were more pronounced in the South, where unmet need declined from 36.66% among women in the lowest wealth group to 23.38% among the richest. In the South, unmet need was also higher among unemployed women and those unexposed to media, while differences by employment and media exposure were smaller or reversed in the North. Health insurance showed little variation in the North, but unmet need was lower among insured women

in the South (12.56% vs. 28.78%).

Table 8: Unmet Need for Family Planning among Rural Women in Northern and Southern Nigeria

Characteristic	Northern			Southern		
	No unmet need n (%)	Unmet need n (%)	95% CI for Unmet Need	No unmet need n (%)	Unmet need n (%)	95% CI for Unmet Need
Age (years)						
15–19	930 (82.10)	203 (17.90)	14.78–21.51	100 (63.80)	56 (36.20)	26.57–47.08
20–24	1,858 (79.57)	478 (20.43)	18.55–22.45	356 (71.18)	145 (28.82)	24.70–33.33
25–29	1,955 (78.82)	526 (21.18)	19.36–23.12	413 (74.31)	143 (25.69)	21.98–29.79
30–39	2,507 (74.20)	872 (25.80)	23.91–27.79	777 (72.17)	299 (27.83)	24.78–31.09
40–49	760 (60.04)	506 (39.96)	36.56–43.47	391 (69.87)	169 (30.13)	25.92–34.70
Education						
No education	5,316 (76.30)	1,652 (23.70)	22.40–25.06	100 (57.30)	75 (42.70)	34.70–51.09
Primary	840 (72.85)	313 (27.15)	24.04–30.50	312 (67.45)	151 (32.55)	28.10–37.34
Secondary	1,472 (73.94)	519 (26.06)	23.49–28.81	1,311 (72.03)	509 (27.97)	25.41–30.68
Higher	389 (80.54)	94 (19.46)	15.46–24.20	321 (82.13)	70 (17.87)	14.04–22.47
Marital status						
Never married	219 (60.49)	143 (39.51)	32.56–46.91	307 (73.85)	108 (26.15)	21.54–31.35
Living with a spouse	7,694 (76.14)	2,410 (23.86)	22.71–25.05	1,645 (70.67)	682 (29.33)	27.19–31.56
Widowed/Divorced/Separated	95 (73.43)	34 (26.57)	18.58–36.45	86 (80.74)	21 (19.26)	11.93–29.57
Wealth status						
Lowest	5,770 (75.87)	1,832 (24.13)	22.88–25.43	382 (63.34)	222 (36.66)	32.77–40.74
Middle	1,397 (74.99)	466 (25.01)	22.38–27.83	647 (69.93)	278 (30.07)	26.98–33.35
Richest	855 (75.63)	275 (24.37)	21.08–27.98	1,012 (76.62)	309 (23.38)	20.94–26.00
Children ever-born						
1 or 2 births	2,404 (79.24)	630 (20.76)	19.08–22.55	609 (76.03)	192 (23.97)	21.02–27.18

3 or 4 births	2,176 (77.97)	615 (22.03)	20.02–24.17	593 (70.51)	248 (29.49)	25.56–33.76
More than 4 births	2,495 (68.06)	1,172 (31.94)	29.97–33.97	466 (62.19)	284 (37.81)	34.11–41.65
Employment						
Unemployed	4,095 (75.93)	1,297 (24.07)	22.46–25.76	404 (68.34)	187 (31.66)	27.57–36.05
Employed	3,923 (75.39)	1,280 (24.61)	23.20–26.07	1,634 (72.36)	624 (27.64)	25.47–29.93
Media exposure						
Unexposed to media	5,425 (76.16)	1,699 (23.84)	22.49–25.26	473 (66.19)	242 (33.81)	30.29–37.53
Exposed to media	2,593 (74.71)	878 (25.29)	23.40–27.29	1,563 (73.27)	571 (26.73)	24.47–29.12
Health insurance						
No	7,916 (75.67)	2,543 (24.33)	23.21–25.49	1,996 (71.22)	806 (28.78)	26.78–30.86
Yes	103 (75.56)	33 (24.44)	16.78–34.16	41 (87.44)	6 (12.56)	5.48–26.23

4.0 Discussions

Spatial Distribution of Unmet Need for Family Planning among Rural Women in Nigeria

This study identified substantial geographical variation in unmet need for family planning among rural women in Nigeria. State-level estimates ranged from 11.54% in Lagos to 40.29% in Enugu, while geopolitical-zone estimates ranged from 22.17% in the North West to 29.97% in the South South. Unmet need was also higher in Southern Nigeria than in Northern Nigeria (28.51% versus 24.33%). These findings demonstrate that national estimates may conceal important subnational differences in family planning needs. The findings are consistent with Alaba et al. (2015), Mercer et al. (2019), and Oyinlola et al. (2024), who reported geographical variation in family planning indicators across Nigeria. Adebayo et al. (2021) similarly identified geographical differences in modern contraceptive use. Such variation may reflect differences in the availability and accessibility of reproductive health services, socioeconomic circumstances, cultural beliefs, fertility preferences, and exposure to family planning information. Previous studies in southeastern Nigeria and Bayelsa State have also identified service accessibility, concerns about side effects, and cultural and religious beliefs as potential barriers to family planning utilisation (Tuebi et al., 2021; Ugochukwu et al., 2020). However, these factors were not directly established as explanations for the geographical patterns observed in the present study. The findings highlight the importance of geographically targeted family planning interventions. Identifying states and zones with higher unmet need can help policymakers prioritise service delivery, contraceptive availability, and community-based reproductive health information. Further investigation into local service and social conditions may help explain the observed differences and guide more context-specific interventions.

Sociodemographic Patterns Associated with Unmet Need for Family Planning

The findings showed that unmet need varied by age, education, marital status, and parity, with age and marital-status patterns differing between Northern and Southern Nigeria. Women with higher education generally had lower proportions of unmet need, consistent with previous studies identifying education and age as important correlates (Ahinkorah et al., 2020; Fagbamigbe et al., 2018; Teshale, 2022). Marital-status differences may reflect variations in fertility intentions, access to information, and partner communication (Ahinkorah et al., 2020; Solanke et al., 2019). Unmet need increased with parity in both regions, reaching 31.94% in the North and 37.81% in the South among women with more than four children. This agrees with previous studies linking higher parity to unmet need, particularly for limiting childbearing (Adebawale et al., 2023; Austin, 2015; Fagbamigbe et al., 2018). These findings highlight the importance of tailoring family planning services to women's demographic and reproductive needs, while interpreting the observed patterns descriptively unless supported by adjusted analyses.

5.0 Conclusion

This study revealed substantial geographical variation in unmet need for family planning among rural women in Nigeria, with state-level estimates ranging from 11.54% in Lagos to 40.29% in Enugu. At the geopolitical-zone level, the South South recorded the highest proportion (29.97%), while the North West recorded the lowest (22.17%). Unmet need was also higher in Southern Nigeria than in Northern Nigeria. These findings highlight the importance of recognising geographical differences when planning and delivering family planning services. The study also identified variations in unmet need across sociodemographic and reproductive groups. Educational attainment, age, marital status, and number of children ever born showed differing patterns across regions, while women with more than four children consistently recorded higher unmet need in both Northern and Southern Nigeria. Overall, the findings underscore the need for geographically targeted and demographically responsive family planning interventions, particularly in high-burden areas and among women with higher parity. Strengthening access to contraceptive information and services may help address unmet need and support women's reproductive intentions.

6. Contribution to Knowledge

- i. **Geographical disparities:** The study demonstrates substantial geographical variation in unmet need for family planning among rural women, ranging from 11.54% in Lagos to 40.29% in Enugu. The South South recorded the highest zonal proportion (29.97%), while the North West recorded the lowest (22.17%).
- ii. **Sociodemographic differences:** The study identifies regional variations in unmet need by age, educational attainment, and marital status, highlighting the importance of considering local demographic patterns when planning family planning interventions.
- iii. **Role of reproductive history:** Women with more than four children consistently recorded higher unmet need in Northern (31.94%) and Southern Nigeria (37.81%), identifying them as an important group for targeted family planning support.

7. Recommendations

- i. **Target high-burden areas:** Health authorities should prioritise states and zones with high observed unmet need, particularly Enugu, Bayelsa, Kwara, Ebonyi, and the South South, while assessing local barriers to family planning access.
- ii. **Tailor services to demographic needs:** Family planning education and services should respond to differences in age, education, and marital status, with particular attention to younger women in Southern Nigeria, who recorded higher unmet need than their Northern counterparts.
- iii. **Support women with higher parity:** Primary healthcare facilities should provide accessible, voluntary counselling and a reliable range of contraceptive options for women with more than four children, supporting informed decisions about spacing or limiting births.

References

- Adebayo, S. B., & Gayawan, E. (2021). Exploring spatial variations, trend and effect of exposure to media as an enhancer to uptake of modern family planning methods: Evidence from 2003 to 2018 Nigeria Demographic Health Survey. *Spatial Demography*, 10(2).
- Adebowale, A. S., & Palamuleni, M. E. (2023). Family planning needs to limit childbearing are unmet, yet our parity is high: Characterizing and unveiling the predictive factors. *BMC Women's Health*, 23, Article 492.
- Ahinkorah, B. O., Ameyaw, E. K., & Seidu, A. A. (2020). Socio-economic and demographic predictors of unmet need for contraception among young women in sub-Saharan Africa: Evidence from cross-sectional surveys. *Reproductive Health*, 17, Article 163.
- Alaba, O. O., Olaomi, J. O., & Olubusoye, O. E. (2015). Spatial pattern and determinants of unmet need of family planning in Nigeria. *South African Family Practice*, 57(5), 306–312.
- Austin, A. (2015). Unmet contraceptive need among married Nigerian women: An examination of trends and drivers. *Contraception*, 91(1), 31–38.
- Babalola, S. (2017). Changes in ideational profiles of women of reproductive age in urban Nigeria: The role of health communication. *Health Education & Behavior*, 44(6), 907–917.
- Bongaarts, J., & Hardee, K. (2019). Trends in contraceptive prevalence in sub-Saharan Africa: The roles of family planning programs and education. *African Journal of Reproductive Health*, 23(3), 96–105.
- Cleland, J., Bernstein, S., Ezeh, A., Faundes, A., Glasier, A., & Innis, J. (2006). Family planning: The unfinished agenda. *The Lancet*, 368(9549), 1810–1827.
- Federal Ministry of Health. (2020). *Nigeria family planning blueprint (2020–2024)*. Federal Ministry of Health, Nigeria.
- Mercer, L. D., Lu, F., & Proctor, J. L. (2019). Sub-national levels and trends in contraceptive prevalence, unmet need, and demand for family planning in Nigeria with survey uncertainty. *BMC Public Health*, 19, Article 1752.
- National Population Commission (NPC) [Nigeria], & ICF. (2019). *Nigeria demographic and health survey 2018*. NPC and ICF.
- Oyinlola, F. F., Kupoluyi, J. A., & Adetutu, O. M. (2024). Changes in unmet need for family planning among married women of reproductive age in Nigeria: A multilevel analysis of a ten-year DHS wave. *PLOS ONE*, 19(8), 1810–1832.
- Sinai, I., Omoluabi, E., Jimoh, A., & Jurczynska, K. (2020). Unmet need for family planning and barriers to contraceptive use in Kaduna, Nigeria: Culture, myths and perceptions. *Culture, Health & Sexuality*, 22(11), 1253–1268.
- Solanke, B. L., Adetutu, O. M., Rahman, S. A., Soladoye, D. A., et al. (2022). Prevalence and determinants of unmet need for contraception among women in low and high-priority segments for family planning demand generation in Nigeria. *Archives of Public Health*, 80, Article 239.
- Solanke, B. L., Oyinlola, F. F., Oyeleye, O. J., & Ilesanmi, B. B. (2019). Maternal and community factors associated with unmet contraceptive need among childbearing women in Northern Nigeria. *Contraception and Reproductive Medicine*, 4, Article 11.
- Teshale, A. B. (2022). Factors associated with unmet need for family planning in sub-Saharan Africa: A multilevel multinomial logistic regression analysis. *PLOS ONE*, 17(2), Article 22.

- Tuebi, M., Apiyanteide, F., Raimi, M. O., Oraelosi, C., & Daniel, S. W. (2021). Quality improvement and acceptance of family planning services in Bayelsa State: Lessons learnt from a review of global family planning programs. *Greener Journal of Medical Sciences*, 11(2), 212–225.
- United Nations Population Fund. (2022). *State of world population 2022: Seeing the unseen—The case for action in the neglected crisis of unintended pregnancy*.
- Wang, C., & Cao, H. (2019). Persisting regional disparities in modern contraceptive use and unmet need for contraception among Nigerian women. *BioMed Research International*, 2019, 12(3), 112–234.
- Wegbom, A. I., Raimi, O., & Fagbamigbe, A. F. (2026). Spatial analysis of the relationship between contraceptive use and under-five mortality in Nigeria. *African Journal of Biology and Medical Research*, 9(1), 71–92.