

Research Article

Determinants of Higher Fertility Rate of Married Women in Rural Nigeria

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Abstract

Background: Nigeria's fertility rate remains high at 5.3 births per woman, with rural areas recording even higher rates, largely due to early marriage, low contraceptive use, and limited female education. This study identifies the factors associated with a higher number of children ever born among married women in rural Nigeria. **Methods:** This study extracted data from the 2018 Nigeria Demographic and Health Survey (NDHS). A binary logistic regression model was employed to assess the determinants of higher fertility rates among married women, with statistical significance set at $p \leq 0.05$ and a 95% confidence interval not including unity. **Results:** The findings revealed that 66.4% of respondents had more children, while 33.6% had fewer children. The factors significantly associated with higher fertility included maternal age, age at first birth, contraceptive use, desire for more children, and level of education. Women aged 30-39 were significantly more likely to have a higher child (aOR = 444.02; 95% CI: 210.37-937.18) than those aged 15-19. An early age at first birth was linked to increased fertility, while contraceptive use and higher educational attainment were associated with fewer children. Additionally, women residing in rural northern Nigeria exhibited higher fertility levels than those in the southern regions. **Conclusion:** The study highlights a high fertility rate among married women in rural Nigeria and the influence of sociodemographic factors. There is a need to focus on girl-child education, discourage early marriage, and expand access to contraceptive services, especially in rural northern Nigeria. Stakeholders should implement a broad public awareness campaign on smaller family sizes' health, economic and social benefits.

Keywords

Higher Fertility Rates, Married Women, Binary Logistic Regression Model, Rural Nigeria, NDHS

1. Introduction

The Total Fertility Rate (TFR) is a key demographic indicator for fertility trends and population growth across the globe [1]. It is defined as the average number of children a woman would bear if she survived through her reproductive

years (ages 15-49) and experienced the age-specific fertility rates of a given period [2]. TFR is a hypothetical measure, as no real cohort of women experiences these exact age-specific rates [1-3]. Expressed as children per woman, it plays a crit-

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ical role in shaping population policies and understanding demographic dynamics [4].

The globally accepted replacement fertility rate is 2.1 children per woman, considered sufficient to maintain population stability in the absence of migration [5, 6]. However, this benchmark can vary slightly due to differences in mortality rates, health system performance, and sex ratios at birth [5]. Recent United Nations projections indicate that global fertility rates will continue to decline and are expected to stabilize around the replacement level by the end of the 21st century [7]. High fertility rates worldwide are commonly associated with a complex interplay of socio-demographic, cultural, and economic factors. In Sub-Saharan Africa, key contributors include limited educational attainment, early marriage, and deeply rooted traditional norms [1, 7]. These same drivers are strongly present in rural Nigeria, where large-family preferences remain deeply ingrained [2, 8].

According to the 2023-24 Nigeria Demographic and Health Survey (NDHS), the national TFR has declined to 4.8 children per woman, from 5.3 in 2018, indicating modest progress [4, 8]. However, these national averages mask significant disparities between urban and rural areas. Rural women have a TFR of 5.6, compared to 3.9 among urban women [9, 12]. Persistently high fertility in rural settings is attributed to socio-cultural norms, early and universal marriage, limited access to contraceptive methods, and lower levels of female education [10, 11, 13].

Cultural norms often promote large families, associating high fertility with social status, wealth, and labour potential [12]. In some regions, male child preference drives continued childbearing until the desired number of sons is achieved [13]. These attitudes are reinforced by traditional values that view large families as symbols of prosperity and security [14]. Socioeconomic factors also play a significant role. In agricultural and informal labour economies, children are often regarded as economic assets and future caregivers [10]. Research also indicates that in households facing economic uncertainty, additional children may be viewed as a source of long-term security, despite potential trade-offs with health and education [11, 12]. Among labour-intensive households, additional children may be seen as beneficial, despite evidence showing that high fertility can reduce overall productivity and long-term savings [15].

Marriage patterns further influence fertility outcomes. Early marriage, which is widespread in many communities, lengthens a woman's reproductive span and increases the likelihood of large family sizes [16-18]. The link between early marriage and high fertility underscores the impact of social customs on reproductive behaviour. In addition, religion and community expectations often limit women's autonomy in making reproductive decisions, thereby reinforcing preferences for large families [19, 20].

Despite numerous efforts to reduce fertility rates, rural communities in Nigeria continue to face structural, cultural, and educational barriers that sustain high fertility [21, 22].

Understanding the specific demographic and socioeconomic dynamics that drive these outcomes is essential for designing effective reproductive health interventions. Therefore, this study aimed to identify the factors associated with a higher number of children ever born among married women in rural Nigeria.

2. Methods

2.1. Study Area

The study was set in rural Nigeria, covering all 36 states and the Federal Capital Territory across six geopolitical zones. Nigeria, the most populous nation in Africa, exhibits pronounced regional differences in education, healthcare access, cultural norms, and fertility, with rural areas exhibiting distinct demographic characteristics.

2.2. Study Design, Population, and Data Source

The analysis utilised secondary data from the 2018 Nigeria Demographic and Health Survey (NDHS), a nationally representative household survey implemented by the National Population Commission (NPC) with technical assistance from ICF under the DHS Program. The NDHS collects detailed information on fertility, family planning, maternal and child health, and socio-demographic characteristics to inform policy and programming.

The 2018 NDHS employed a stratified two-stage cluster sampling design. In the first stage, 1,389 Enumeration Areas (EAs) were selected from the national sampling frame based on the 2006 Population and Housing Census. In the second stage, a fixed number of households were systematically chosen within each EA. The survey included approximately 45,000 households, and eligible women were those aged 15-49 years who were either permanent residents or visitors who slept in the household the night before the survey. The response rate for eligible women exceeded 95%.

For this study, the analytic sample comprised currently married women aged 15-49 years residing in rural areas. Women with missing or incomplete fertility histories were excluded from the analysis.

2.3. Dependent and Independent Variables

The dependent variable was the number of children ever born (CEB) to each respondent, categorized into lower children (≤ 2) and higher children (> 2), based on replacement level of 2.1 [5] while the independent variables included maternal age, age at first marriage, age at first birth, educational attainment, region of residence, current contraceptive use, desire for more children, household wealth index, working status, history of pregnancy termination and number of sexual partners.

2.4. Data Analysis

Data from the 2018 NDHS were cleaned, edited, and coded following the study's dependent and independent variables, then analysed using Stata version 17. The dependent variable, number of children ever born, was dichotomised into high fertility (1) and low fertility (0). A binary logistic regression model was fitted to identify factors associated with high fertility among married women in rural Nigeria. Independent variables were checked for multicollinearity before inclusion, and NDHS survey weights were applied to account for the complex sampling design. Crude and adjusted odds ratios were estimated. Statistical significance was set at $p \leq 0.05$, and 95% confidence intervals (CIs) not including unity.

The general form of the binary logistic regression model is:

$$\ln \left[\frac{P_i}{1-P_i} \right] = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \varepsilon_i \quad (1)$$

Where:

P_i = probability that woman i has high fertility

β_0 = Intercept

$\beta_1 \dots \beta_k$ = coefficients for each independent variable

$X_{1i} \dots X_{ki}$ = independent variables for woman i (e.g., age, education, contraceptive use, region)

ε_i = Error term

The binary logistic regression estimates the log odds of high fertility, allowing interpretation of results in terms of odds ratios (ORs).

3. Results

The demographic and socioeconomic profile of women in rural Nigeria is presented in [Table 1](#). The analysis indicates that most respondents were aged 20-29 years (36.57%) and 30-39 years (31.94%), while smaller proportions were found in the 15-19 years (7.92%) and 40-49 years (23.57%) age groups. A substantial 74.35% of the women were married before the age of 20, and 64.96% had their first birth within this age range. In contrast, only 8.79% of respondents were married at age 25 or older. Additionally, a proportion (85.82%) reported no history of abortion, while 76.83% had used contraceptive methods. Approximately 73.85% expressed a desire for more children, indicating strong reproductive intentions. Moreover, 94.08% of the women were either married or cohabiting with a male partner.

Religious affiliation among respondents showed that 60.31% identified as Muslim, while 38.74% identified as Christian. Educational attainment was generally low, with over half of the women (55.25%) having no formal education, and only 4.17% attaining tertiary education. Employment status varied, with 67.70% of the women currently engaged in some form of work. About 31.22% of respondents were classified within the lowest wealth index category.

Table 1. Socio-demographic Characteristics of Married Women in Northern Rural Nigeria.

Variables	Frequency (%)
Current Age	
15 - 19 years	1556 (7.92)
20 - 29 years	7185 (36.57)
30 - 39 years	6276 (31.94)
40 - 49 years	4631 (23.57)
Age at first marriage	
< 20 years	14609 (74.35)
20 - 24 years	3312 (16.86)
25+ years	1727 (8.79)
Age at first birth	
< 20 years	11837 (64.96)
20 - 24 years	4609 (25.29)
25+ years	1775 (9.74)
History of pregnancy termination	
No	16863 (85.83)
Yes	2785 (14.17)
Contraceptive Use	
No	15096 (76.83)
Yes	4552 (23.17)
Desired more children	
No	4634 (26.15)
Yes	13084 (73.85)
Current marital status	
Currently in union/living with a man	18485 (94.08)
Formerly in union/living with a man	1163 (5.92)
Religion	
Christian	7612 (38.74)
Islam	11850 (60.31)
Traditional	94 (0.48)
Others	92 (0.47)
Education level	
No Education	10855 (55.25)
Primary	3432 (17.47)
Secondary	4542 (23.12)
Tertiary	819 (4.17)
Currently working	
No	6346 (32.30)

Variables	Frequency (%)
Yes	13302 (67.70)
Wealth Index	
Poorest	6135 (31.22)
Poorer	5733 (29.18)
Middle	4151 (21.13)
Richer	2445 (12.44)
Richest	1184 (6.03)
Region of residence	
North	14925 (75.96)
South	4723 (24.04)
Lifetime number of sexual partners	
1	13189 (67.72)
2	3650 (18.74)
>=3	2636 (13.54)

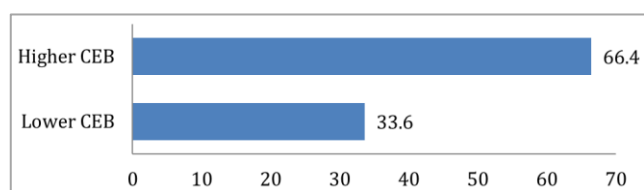


Figure 1. Distribution of Lower & Higher Number of Children Ever Born by Married Women in Rural Nigeria.

The fertility demonstrated a higher birth rate among rural

women, as illustrated in Figure 1. A majority (66.4%) reported a high number of children ever born, while only 33.6% had fewer children.

Factors Associated with a Higher Number of Children Ever Born by Married Women in Rural Nigeria

Table 2 shows the key factors linked to high fertility among married women in rural Nigeria. Major predictors included maternal age, age at first birth, contraceptive use, fertility preferences, educational level, and region of residence. Compared to women aged 15-19 years, those aged 20-29 years had more than 25 times higher odds of high fertility (aOR = 25.32; 95% CI: 12.27-52.23), while women aged 30-39 years had over 444 times higher odds (aOR = 444.02; 95% CI: 210.37-937.18), and those aged 40-49 years had more than 703 times higher odds (aOR = 703.43; 95% CI: 323.53-1529.41). Women who delayed their first birth showed lower odds of high fertility: those whose first birth was at 20-24 years had 67.5% reduced odds (aOR = 0.325; 95% CI: 0.272-0.388), and those giving birth at age 25 or older had 92.4% reduced odds (aOR = 0.076; 95% CI: 0.053-0.108), compared to women who had their first child before age 20. Not using contraceptives was linked to a 28.1% increase in the likelihood of high fertility (aOR = 1.281; 95% CI: 1.082-1.516). Women wishing for more children were less likely to have already reached high fertility (aOR = 0.201; 95% CI: 0.157-0.257). Higher educational levels lowered the chances of high fertility: women with secondary education had 33% lower odds (aOR = 0.670; 95% CI: 0.528-0.850), and those with tertiary education had 43.4% lower odds (aOR = 0.566; 95% CI: 0.398-0.805) compared to women without any formal education. Regional differences were also notable, as women in southern rural areas had lower odds of high fertility (aOR = 0.862; 95% CI: 0.783-0.931) compared to their northern counterparts.

Table 2. Factors Associated with a Higher Number of Children Ever Born by Married Women in Rural Nigeria.

Factors	uOR	95% CI for uOR	aOR	95% CI for aOR
Current Age				
15 - 19 years	1.000		1.000	
20 - 29 years	77.371	(37.173 - 161.038) *	25.317	(12.271 - 52.234) *
30 - 39 years	502.086	(238.736 - 1055.94) *	444.020	(210.369 - 937.177) *
40 - 49 years	878.243	(417.875 - 1845.794) *	703.426	(323.530 - 1529.405) *
Age at first marriage				
< 20 years	1.000		1.000	
20 - 24 years	0.733	(0.666 - 0.807) *	0.895	(0.714 - 1.123)
25+ years	0.598	(0.524 - 0.683) *	0.821	(0.571 - 1.179)
Age at first birth				
< 20 years	1.000		1.000	

Factors	uOR	95% CI for uOR	aOR	95% CI for aOR
20 - 24 years	0.609	(0.558 - 0.665) *	0.325	(0.272 - 0.388) *
25+ years	0.407	(0.357 - 0.465) *	0.076	(0.053 - 0.108) *
History of pregnancy termination				
No	1.000		1.000	
Yes	1.088	(0.989 - 1.196)	1.203	(0.991 - 1.396)
Contraceptive Use				
Yes	1.000		1.000	
No	1.548	(1.404 - 1.707) *	1.281	(1.082 - 1.516) *
Desired more children				
No	1.000		1.000	
Yes	0.506	(0.048 - 0.066) *	0.201	(0.157 - 0.257) *
Current marital status				
Currently in union/living with a man	1.000		1.000	
Formerly in union/living with a man	0.920	(0.773 - 1.095)	0.863	(0.776 - 1.195)
Religion				
Christian	1.220	(0.707 - 2.106)	0.836	(0.354 - 1.971)
Islam	1.477	(0.855 - 2.553)	0.873	(0.528 - 0.850)
Traditional	3.072	(1.278 - 7.383) *	0.853	(0.223 - 3.260)
Others	1.000		1.000	
Maternal Education				
No Education	1.000		1.000	
Primary	1.049	(0.940 - 1.170)	0.865	(0.701 - 1.067)
Secondary	0.435	(0.394 - 0.480) *	0.670	(0.528 - 0.850) *
Tertiary	0.409	(0.336 - 0.498) *	0.566	(0.398 - 0.805) *
Currently working				
No	1.000		1.000	
Yes	1.763	(1.631 - 1.905) *	1.066	(0.937 - 1.214)
Wealth Index				
Poorest	1.000		1.000	
Poorer	0.852	(0.773 - 0.940) *	1.058	(0.871 - 1.284)
Middle	0.779	(0.700 - 0.867) *	1.023	(0.833 - 1.255)
Richer	0.713	(0.634 - 0.802) *	1.104	(0.852 - 1.430)
Richest	0.545	(0.460 - 0.647) *	0.919	(0.660 - 1.280)
Region of residence				
North	1.000		1.000	
South	0.871	(0.789 - 0.961) *	0.862	(0.783 - 0.931) *
Lifetime number of sexual partners				
1	1.000		1.000	
2	1.222	(1.116 - 1.339) *	1.028	(0.869 - 1.216)

Factors	uOR	95% CI for uOR	aOR	95% CI for aOR
>=3	0.813	(0.724 - 0.913) *	0.826	(0.679 - 1.005)

Significant at 5% level of significance; uOR: Unadjusted Odds Ratio; aOR: Adjusted Odds Ratio; CI: Confidence Interval

4. Discussion

This study sheds light on the determinants of higher fertility rates among married women in rural Nigeria. The findings indicate persistently high fertility rates, with more than two-thirds of respondents reporting many children. This pattern reflects a strong pronatalist orientation in rural communities, shaped by entrenched sociocultural norms, limited access to reproductive health services, and low levels of female empowerment [19, 20]. Similar observations have been reported in studies on variations in desired fertility preferences among young and older women in Nigeria, which found that rural fertility rates remain significantly higher than those in urban areas due to structural inequalities, cultural beliefs, and gendered expectations [21]. Although our study focused exclusively on rural settings, evidence from other research has shown that some urban women also maintain high fertility levels, partly due to strong cultural ties to rural communities, which reinforce pronatalist norms despite differences in living environments [21, 22].

Age emerged as a particularly strong determinant of fertility in the rural areas. Women aged 30-39 had significantly higher odds of having more children compared to those aged 15-19, underscoring the cumulative nature of reproductive exposure. Prolonged reproductive spans, often in the context of limited birth spacing, contribute to higher parity [5, 19, 20]. This is consistent with Garenne findings [19], who reported that early marriage and low contraceptive uptake extend fertility windows and sustain high parity in sub-Saharan Africa. The observed inverse relationship between age at first birth and the total number of children ever born further supports existing demographic evidence [23-25]. Women who had their first child after age 20, particularly at 25 or older, tended to have fewer children, suggesting that delayed childbearing serves as a natural fertility-limiting factor [7, 21, 25]. Similar results have been documented in rural Ethiopia and northern Ghana, where later first births were associated with reduced lifetime fertility [26, 27]. However, evidence from South Asia and parts of West Africa suggests that in settings with high desired family sizes and low contraceptive prevalence, women may “catch up” on childbearing after a delayed start [28, 29].

Contraceptive use was another important predictor of fertility outcomes. Women who reported using contraceptives had fewer children, supporting the established role of family planning in lowering fertility [21, 30]. Nevertheless, a paradox emerged, high reported contraceptive use coincided with

persistently high fertility rates. This could be indicative of inconsistent or delayed contraceptive use, especially after women have reached high parity. Such patterns have been observed elsewhere in sub-Saharan Africa, where contraceptive prevalence alone does not guarantee fertility decline due to discontinuation, method switching, or incorrect use [19, 31].

Nevertheless, our finding revealed that women who expressed a desire for more children had fewer children than those who did not. This apparent contradiction may be explained by differences in age. Older women are more likely to have reached their desired family size and thus report no further fertility intentions, whereas younger women may wish for more children despite currently having fewer [21, 32]. This supports recent evidence that fertility preferences are dynamic, shifting throughout a woman’s reproductive life in response to factors such as age, child survival, and changing socio-economic conditions [32]. Women with secondary or tertiary education had substantially fewer children than those with no formal education. This finding aligns with a robust body of research showing that female education delays marriage and first births, increases contraceptive uptake, and enhances women’s reproductive autonomy [26, 29, 33]. Nonetheless, some evidence from rural patriarchal contexts suggests that the fertility-reducing effect of education may be moderated by gender norms and limited decision-making power [23, 34].

The results further revealed significant regional disparities. Women in southern rural areas had markedly fewer children than their northern counterparts, consistent with previous studies linking regional fertility differences to variations in educational attainment, cultural norms, socio-economic development, and access to healthcare [20, 26, 35]. These findings stress the importance of region-specific, culturally sensitive fertility interventions that address the underlying socio-cultural and structural determinants within each geopolitical zone.

The primary strength of this study lies in its use of nationally representative data, the 2018 NDHS to enhance the generalizability of the findings to rural Nigeria. Furthermore, the study utilizes the appropriate methodology for analysis, the binomial logistic regression, and thus ensures the credibility of the observed correlation between fertility outcomes and predictor variables. Specifically addressing rural women, a group often neglected in fertility studies, this study fills a critical research gap and contributes crucial insights to national policy discussions on reproductive health and population growth. However, the study was limited to a cross-sectional design, which re-

stricts the ability to establish causal relationships between explanatory variables and fertility experiences. Nevertheless, the study presents crucial evidence for developing targeted interventions to lower high fertility and improve reproductive health outcomes in rural Nigeria.

5. Conclusion and Recommendations

This study showed that a significant proportion of married women in rural Nigeria had higher fertility, and was influenced by maternal age, age at first birth, contraceptive use, educational attainment, and region of residence. Our study suggests a focus on girl-child education, discouraging early marriage, and expanding access to contraceptive services, especially in rural northern Nigeria. Furthermore, stakeholders should encourage male involvement and implement a broad public awareness campaign on smaller family sizes' health, economic and social benefits.

Abbreviations

TFR	Total Fertility Rate
aOR	Adjusted Odds Ratio
CI	Confidence Interval
SD	Standard Deviation
NDHS	Demographic and Health Survey
UN	United Nations
WHO	World Health Organization

Author Contributions

Salome Amarachi Ike-Wegbom: Conceptualization, Data Curation, Software, Formal Analysis, Methodology, Writing Original Draft, Writing – review & editing

Anthony Ike Wegbom: Conceptualization, Data Curation, Software, Validation, Methodology, Writing – original draft, Writing – review & editing

Adolphus Okechukwu Nwaoburu: Conceptualization, Data Curation, Validation, Methodology, Writing – original draft, Writing – review & editing

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Ethical Approval

This study utilised publicly available DHS data. Ethical approval for the survey was granted to ICF Macro by the relevant institutional review board, and permission to use the dataset was obtained.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] World Health Organization (WHO). Retrieved January 18, 2025, from <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/123>
- [2] Borzoiopour, S., Alizadeh, G., Jafary, H., & Zarnaq, R. K. (2024, Sept 3). Identify Affecting Factors on Total Fertility Rate: A Systematic Review. *Health Scope*. <https://doi.org/10.5812/healthscope-139351>
- [3] Cheng, H., Luo, W., Si, S. *et al*. Global trends in total fertility rate and its relation to national wealth, life expectancy and female education. *BMC Public Health* 22, 1346 (2022). <https://doi.org/10.1186/s12889-022-13656-1>
- [4] Wang, Q., and Sun, X. (2016, Nov 1). The Role of Socio-political and Economic Factors in Fertility Decline: A Cross-country Analysis. *World Development*. <https://doi.org/10.1016/J.WORLDDEV.2016.07.004>
- [5] Gietel-Basten, S., and Scherbov, S. (2020). Exploring the 'True Value' of Replacement Rate Fertility. *Population Research and Policy Review*, 39. <https://doi.org/10.1007/s11113-019-09561-y>
- [6] Adamson, G., and Ezzati, M. (2023). Total fertility rate and fertility care: Demographic shifts and changing demands.
- [7] United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019: Highlights (ST/ESA/SER.A/423).
- [8] Fagbamigbe, A., and Adebowale, A. (2014, March 1). Current and Predicted Fertility using Poisson Regression Model: Evidence from 2008 Nigerian Demographic Health Survey. *African Journal of Reproductive Health*. <https://doi.org/10.4314/AJRH.V18I1>
- [9] Olalekan, W., Esther, A., Olusegun, J., and Olugbenga, A. (2011). Comparative study of socio-demographic determinants and fertility pattern among women in rural and urban communities in southwestern Nigeria. *Semantic Scholar*.
- [10] Ibrahim, M., and Rufus, T. (2023). Impacts of Early Marriage on Fertility Outcomes in Nigeria. *Texila International Journal of Public Health*. <https://doi.org/10.21522/tijph.2013.11.04.art014>
- [11] Rahman A, Hossain Z, Rahman ML, and Kabir E (2022). Determinants of children ever born among ever-married women in Bangladesh: evidence from the Demographic and Health Survey 2017-2018. *BMJ Open*.; 12(6): 1-11.
- [12] Onyinyechi, U., Duanyo, T., and Joseph, D. (2023). Socio-Cultural Practices and Fertility Behaviour of Rural Dwellers in Alayi, Abia State, Nigeria. *Global Academic Journal of Humanities and Social Sciences*. <https://doi.org/10.36348/gajhss.2023.v05i02.005>

- [13] Millazo, A. (2014). Son Preference, Fertility and Family Structure: Evidence from Reproductive Behavior Among Nigerian Women. *Development Economics: Women*. <https://doi.org/10.1596/1813-9450-6869>
- [14] Oghenekevwe, O. P. (2024). A Reassessment of the Fertility Rate-Poverty Rate Nexus: Evidence from Nigeria. *International journal of research and innovation in social science*. <https://doi.org/10.47772/ijriss.2024.804090>
- [15] Olalekan, W., Asekun-Olarinmoye, E., Olusegun, J., and Olugbenga, A. (2011). A Comparative Study of Socio-Demographic Determinants and Fertility Pattern Among Women in Rural and Urban Communities in Southwestern Nigeria. *Wilolud Journals*, 5(1). Total fertility rate (per woman). (n.d.). World Health Organisation (WHO). Retrieved January 18, 2025, from <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/123>
- [16] Olaosebikan, J., Ogundana, C., and Sunmola, K. (2021). Contextual determinants of children ever born among women of reproductive age in a selected southwest state in Nigeria. *European Journal of Sociology*. <https://doi.org/10.47672/EJS.847>
- [17] Akinyemi, J., and Odimegwu, C. (2021). Social contexts of fertility desire among non-childbearing young men and women aged 15-24 years in Nigeria. *Reproductive Health*, 18. <https://doi.org/10.1186/s12978-021-01237-1>
- [18] Adebawale, A. S., Fagbamigbe, F. A., and Okareh, T. O. (2019). Ethnic inequalities in fertility level and preferences in Nigeria: A decomposition analysis. *BMC Public Health*, 19(1), 1756. <https://doi.org/10.1186/s12889-019-8112-6>
- [19] Garenne, M. (2020). Fertility trends in sub-Saharan Africa: An assessment of recent evidence. *Demographic Research*, 43, 1327-1348. <https://doi.org/10.4054/DemRes.2020.43.46>
- [20] Akinyemi, J. O., Adedini, S. A., and Odimegwu, C. O. (2020). Urban-rural variations in reproductive health outcomes among Nigerian women. *Health & Place*, 63, 102356. <https://doi.org/10.1016/j.healthplace.2020.102356>
- [21] Amoo, E. O., and Igbokwe, D. O. (2019). Contraceptive use and fertility reduction among women in Nigeria: Evidence from demographic and health surveys. *African Population Studies*, 33(2), 4562-4575. <https://doi.org/10.11564/33-2-1427>
- [22] Cleland, J., Conde-Agudelo, A., Peterson, H., Ross, J., and Tsui, A. (2015). Contraception and health. *The Lancet*, 380(9837), 149-156. [https://doi.org/10.1016/S0140-6736\(12\)60609-6](https://doi.org/10.1016/S0140-6736(12)60609-6)
- [23] Akiny, S. (2019). Gender norms and women's reproductive health decision-making in rural Africa: A review. *Reproductive Health Matters*, 27(2), 78-86. <https://doi.org/10.1080/09688080.2019.1659843>
- [24] Ezeh, A. C., Bankole, A., and Cleland, J. (2020). Policies for fertility transition in Nigeria. *Studies in Family Planning*, 51(4), 373-388. <https://doi.org/10.1111/sifp.12145>
- [25] Kodzi, I. A., Atake, E. H., and Emina, J. B. (2018). Education and fertility in sub-Saharan Africa: A cross-country analysis. *Journal of Population and Social Studies*, 26(2), 151-168. <https://doi.org/10.25133/JPSSv26n2.012>
- [26] National Population Commission (NPC) [Nigeria] & ICF. (2021). *Nigeria Demographic and Health Survey 2018*. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF. <https://dhsprogram.com/publications/publication-FR359-DHS-Final-Reports.cfm>
- [27] Ochako, R., Wawire, S., and Fotso, J. C. (2016). Gender norms and family planning decision-making in urban Kenya. *Reproductive Health*, 13(1), 17. <https://doi.org/10.1186/s12978-016-0136-3>
- [28] UNFPA. (2022). *Seeing the Unseen: The case for action in the neglected crisis of unintended pregnancy*. United Nations Population Fund. <https://www.unfpa.org/unintendedpregnancy>
- [29] UNICEF. (2021). *Child marriage: Latest trends and future prospects*. United Nations Children's Fund. <https://data.unicef.org/resources/child-marriage-latest-trends-and-future-prospects>
- [30] Ajayi, A. I., & Adeniyi, O. V. (2019). Determinants of contraceptive discontinuation in Nigeria: Results from the 2013 Nigeria Demographic and Health Survey. *BMC Public Health*, 19(1), 1-11. <https://doi.org/10.1186/s12889-019-7760-4>
- [31] Tsui, A. O., Brown, W., & Li, Q. (2018). Contraceptive practice in sub-Saharan Africa. *Population and Development Review*, 44(Suppl 1), 166-191. <https://doi.org/10.1111/padr.12127>
- [32] Sedgh, G., & Hussain, R. (2018). Reasons for contraceptive nonuse among women having unmet need for contraception in developing countries. *Studies in Family Planning*, 49(2), 143-170. <https://doi.org/10.1111/sifp.12065>
- [33] Bongaarts, J. (2020). Trends in fertility and fertility preferences in sub-Saharan Africa: The roles of education and family planning programs. *Genus*, 76(1), 1-16. <https://doi.org/10.1186/s41118-020-00083-3>
- [34] Upadhyay, U. D., & Karasek, D. (2019). Women's empowerment and ideal family size: An examination of DHS empowerment measures in sub-Saharan Africa. *International Perspectives on Sexual and Reproductive Health*, 45, 85-99. <https://doi.org/10.1363/45e852019>
- [35] National Bureau of Statistics (NBS). (2020). *Demographic statistics bulletin*. NBS. <https://nigerianstat.gov.ng>