

Trend and determinants of completed fertility in Nigeria: exploring the modulating effects of education and women's decision-making autonomy

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Extended abstract

Background

Globally, most countries are almost at or near to the end of their fertility transitions with fertility growing below replacement with only exception in sub-Saharan Africa (SSA), where fertility and population growth remain high (Kisato, 2021). The Total Fertility Rate (TFR) of sub-Saharan Africa was estimated to be 4.7 births per woman in 2015–2020, which is more than twice the level of any other world region. Consequently, the population of the region is expected to grow from 1 billion in 2015 to more than 2 billion in 2050 and nearly 4 billion in 2100 (UN, 2019). No doubt, the growing fertility rates will contribute to rapid population and exert pressure on various aspects of human endeavours in the region (Bongaarts, 2020), especially in Nigeria, with the ninth highest TFR of 5.1 children per woman and the most populous country in the region (PRB, 2023). Most previous fertility studies in Nigeria have focused on the actual number of live births pertaining to all women, irrespective of their age or lifecycle (Adebowale et al., 2020; Alaba, Olubusoye & Olaomi, 2017; Götmark & Nordhild, 2024; Mashood, 2021; Olowolafe et al., 2023). Thus, studying the fertility of all women irrespective of age is liable to statistical censoring. Perhaps the determinants of fertility among women who are nearing or have completed their reproductive periods will give a more realistic picture of fertility behaviour of women. This study examined the trend and determinants of completed fertility in Nigeria with a focus on the modulating effects of education and women's decision-making autonomy, while adjusting for some co-variables. Also, data on completed fertility collected over multiple periods will provide a trend analysis of fertility decline, as well as become valuable in understanding the factors that will drive fertility transition in Nigeria.

Data and methods

Data for the study were drawn from a nationally representative sample of 6,598 women who are nearing or at the end of their reproductive life (essentially, age 40-49). The data were generated from the three continuous Nigeria Demographic and Health Surveys (2008, 2013 and 2018) conducted after Nigeria's 2004 National Policy on Population and Sustainable Development. Detailed reports of the methods and procedures employed during the data collection for the surveys have been published elsewhere (NPC & ICF Macro, 2009; NPC & ICF International, 2014; NPC & ICF International, 2019). Information on fertility was obtained by Demographic and Health Survey from female respondents of childbearing age (15-49 years) on their fertility behaviours.

The analysis for this study was restricted to women who are nearing or at the end of their reproductive life (essentially, age 40-49). This serves as an indicator of average completed fertility for women who have passed through their reproductive years until the end of it within the years preceding the survey. Women who reported being married or living together with partners and those who had given birth to at least one child in the years that preceded the

surveys were included in the analysis. The outcome variable of the study is 'completed fertility', which is captured as the average number of all children ever born (CEB), both surviving and dead, born to women aged 40-49 (Westoff and Kristin, 2015). The CEB was dichotomised and measured as a woman having '1-3 children' defined as low completed fertility (coded 0); and '4 children and above' defined as high completed fertility (coded 1). The main explanatory variables were education and decision-making autonomy. The level of autonomy was measured by women's involvement in household decision-making questions including the following four subjects: 1) the person who usually decides on the respondent's healthcare, 2) the person who usually decides on large household purchases, 3) the person who usually decides how to spend respondent's earnings, and 4) the person who usually decides on visits to family or relatives. For each of the decision-making questions, five responses were given as 'respondent alone', 'respondent with husband/partner', 'husband/partner alone', 'someone' or 'others'. The responses were grouped as '1' where women took decisions alone or jointly with their husband/partner; and '0' where partners alone, someone else or others took such decisions. For this study, the women's level of autonomy was determined by their involvement or no involvement. Therefore, in line with a previous study, a scale of 0 to 3 was derived as 'low autonomy' with scores '0-1' and scores '2-3' regarded as 'high autonomy' (Banjo et al., 2018). The co-variables likely to influence completed fertility included in the analysis were wealth quintile, working status, place of residence, region, family planning, age at first birth, age at marriage and partner's educational attainment. Binary logistic regression analyses were carried out at univariate, bivariate and multivariate levels using Stata software (version 15).

Results/ key findings

Figure 1 showed a slight decrease in the mean number of CEBs from 7.9 children in 2008 to 7.6 children in 2018. The mean number of CEB was higher than the TFR as recorded across the survey years. Multivariate results from the adjusted logistic regression are presented in Table 1 below. Two models were fitted in each of the survey years. Model 1 adjusted for the main explanatory variables to measure their modulating effects on the outcome variables, while Model 2 presented the adjusted logistic regression analysis for the main explanatory variables and selected co-variables. As shown in Model 1, women's educational attainment is significantly associated with completed fertility. For instance, women who had secondary or tertiary education maintained a significantly lower completed fertility in 2008 (aOR: 0.16; CI: 0.10-0.25), 2013 (aOR: 0.17; CI: 0.11-0.27) and 2018 (aOR: 0.07; CI: 0.04-0.11) compared to those with no education. Although not significant, women with high autonomy were more likely to have higher completed fertility than their counterparts with low autonomy in 2008 (aOR: 1.41; CI: 0.84-2.36) and 2018 (aOR: 1.31; CI: 0.80-2.17). The result was different in 2013 where the likelihood of having higher completed fertility was reduced among women with high autonomy (aOR: 0.74; CI: 0.41-1.33). After adjusting for the effects of co-variables, the results were found to be consistent (in Model 2). The results in Model 2 further showed that women found in the highest wealth quintile households were less likely to have high completed fertility than those in the reference category. Women using family planning and those who were married at age 25 or older had significantly higher completed fertility compared to their counterparts in the reference categories across the survey years. Also, only women from the North-west region maintained a significantly higher completed fertility compared to women from the North-central across the survey years.

Contribution to knowledge

The findings of this study have some policy implications for achieving the Sustainable Development Goals (SDGs), especially by reducing high fertility; and empowering all women through free and compulsory education in Nigeria. The study concludes that pragmatic efforts should be made by the government at all levels to develop policies that will encourage girls in schools to attain higher educational qualifications. This will help to expose

them to the rights of women regarding household decision-making, as well as the reasons for the use of family planning. Also, women who are pursuing a higher educational qualification can be protected against early marriage and having a high completed fertility at the end of their reproductive years.

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Figure 1: Trends in the mean number of Children Ever Born to women age 40-49 (CEB) and Total Fertility Rate (TFR)

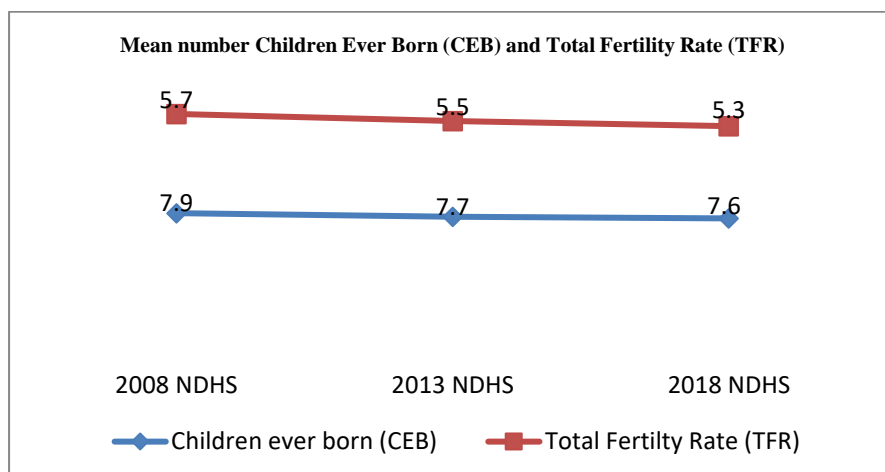


Table 1: Adjusted and unadjusted logistic regression between the explanatory variables and number children ever born, NDHS 2008, 2013 and 2018

Characteristics	2008 NDHS		2013 NDHS		2018 NDHS	
	Model 1 aOR(95% CI)	Model 2 aOR(95% CI)	Model 1 aOR(95% CI)	Model 2 aOR(95% CI)	Model 1 aOR(95% CI)	Model 2 aOR(95% CI)
Educational attainment						
No education (RC)	1.00	1.00	1.00	1.00	1.00	1.00
Primary	0.59(0.34-1.02)	0.79(0.39-1.62)	0.51(0.30-0.86)*	0.93(0.44-1.93)	0.30(0.17-0.54)***	0.77(0.35-1.66)
Secondary/tertiary	0.16(0.10-0.25)***	0.39(0.17-0.90)*	0.17(0.11-0.27)***	0.44(0.19-1.00)*	0.07(0.04-0.11)***	0.33(0.15-0.70)***
Decision-making autonomy						
Low autonomy (RC)	1.00	1.00	1.00	1.00	1.00	1.00
High autonomy	1.41(0.84-2.36)	1.29(0.71-2.32)	0.74(0.41-1.33)	0.65(0.32-1.33)	1.31(0.80-2.17)	1.43(0.75-2.72)
Partner's educational attainment						
No education (RC)		1.00		1.00		1.00
Primary		0.68(0.34-1.36)		1.44(0.65-3.19)		1.39(0.61-3.15)
Secondary/tertiary		0.91(0.43-1.36)		0.80(0.36-1.74)		1.26(0.58-2.72)
Employment status						
Not working (RC)		1.00		1.00		1.00
Currently working		1.53(0.87-2.67)		1.06(0.52-2.16)		1.10(0.58-2.08)
Wealth Quintile						
Lowest (RC)		1.00		1.00		1.00
Middle		1.38(0.68-2.82)		0.49(0.24-0.98)*		0.92(0.45-1.85)
Highest		0.82(0.39-1.72)		0.44(0.20-0.96)*		0.50(0.26-0.96)*
Ever used family planning						
No (RC)		1.00		1.00		1.00
Yes		2.40(1.36-4.24)**		2.79(1.65-4.70)***		3.36(2.16-5.21)***
Family structure						
Monogamous (RC)		1.00		1.00		1.00
Polygamous		1.38(0.83-2.31)		0.71(0.44-1.15)		1.44(0.83-2.48)
Age at first birth (years)						
Less than 20 years (RC)		1.00		1.00		1.00
20-24 years		0.50(0.19-1.30)		0.27(0.09-0.79)*		0.19(0.06-0.60)**
25 years and above		0.07(0.03-0.16)***		0.03(0.01-0.09)***		0.04(0.01-0.12)***
Age at marriage (years)						
Less than 20 years (RC)		1.00		1.00		1.00
20-24 years		1.23(0.60-2.52)		2.57(1.18-5.60)*		1.79(0.83-3.84)
25 years and above		0.74(0.37-1.47)		0.60(0.30-1.20)		0.58(0.28-1.21)
Place of Residence						
Urban (RC)		1.00		1.00		1.00
Rural		1.52(0.86-2.68)		0.82(0.49-1.38)		1.36(0.88-2.08)
Region						
North-central (RC)		1.00		1.00		1.00
North-east		2.48(1.04-5.89)*		2.87(1.11-7.40)*		1.94(0.80-4.75)
North-west		1.93(0.89-4.19)*		3.00(1.37-6.57)**		3.20(1.26-8.12)*
South-east		1.08(0.51-2.28)		1.15(0.56-2.36)		0.86(0.46-1.62)
South-south		1.44(0.59-3.53)		1.85(0.90-3.82)		0.68(0.35-1.33)
South-west		1.30(0.65-2.61)		1.33(0.71-2.48)		0.99(0.53-1.84)

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; RC= reference category