

REVIEW ARTICLE  
CONTRACEPTIVE USE AND ADJUSTED TOTAL FERTILITY RATE AMONG WOMEN OF  
REPRODUCTIVE AGE IN NORTHERN NIGERIA

Imoh Joy Abiola,<sup>1</sup> Adebowale Ayo Stephen,<sup>2</sup> Imoh, Lucius Chidiebere<sup>3</sup> Onuh Samuel Ameh<sup>4</sup>

<sup>1</sup> Department of Statistics Federal College of Forestry Jos, Nigeria

<sup>2</sup> Department of Epidemiology and Medical Statistics, Faculty of Public Health University of Ibadan

<sup>3</sup> Department of Chemical Pathology Jos University Teaching Hospital

<sup>4</sup> Department of Obstetrics and Gynaecology Jos University Teaching Hospital.

**Corresponding Author:**

**Imoh Joy Abiola**

Department of Statistics

Federal College of Forestry Jos, Nigeria,

Email: ojeyimoh@gmail.com

## ABSTRACT

**Background:** Higher fertility rates in northern Nigeria is a major driver for the rapid population growth in Nigeria. Contraceptive use rate is related to fertility rates. Deductions from previous studies on effect of contraceptive use on total fertility rates (TFR) is limited by inherent errors in data for computing TFR. This study examines the effect of contraceptive use, (modern and traditional) on TFR among women of reproductive age in northern Nigeria, on a large body of data, using superior demographic tool (adjusted TFR).

**Methodology:** The study utilised data from the Nigeria Demographic and Health Survey (NDHS) 2008. The NDHS is a national representative survey of 33,385 women age 15-49 years. Data were extracted from the complete dataset with focus on 17,031 women resident in the north (north east, north west, north central). Variables used in the study included: ever-use and current-use (4 weeks preceding the survey) of contraceptive, age, and parity. The dataset was weighted and analysed using descriptive statistics. The Coale and Trussell P:F ratio model was used to estimate the Total Fertility Rate (TFR).

**Results:** Mean age of respondents was 29.9 ± 9.2 years. Prevalence of current and ever-use of any contraceptive method were 12.3% and 13.3%; 11.7% and 12.1% for any modern contraceptive method respectively. The adjusted TFR for northern Nigeria was 7.6, while adjusted TFR of 7.9 and 5.8 were estimated for women who had never and ever used any contraceptive method respectively.

**Conclusion:** Use of contraceptives was associated with lower adjusted TFR. Campaigns on contraceptive usage in northern Nigeria should be increased.

**Keywords:** Contraceptive use, adjusted Total Fertility Rate, Women of Reproductive Age, Northern Nigeria.

## INTRODUCTION

World's population recently hits 7 billion and at the risk of further increase.<sup>1,2</sup> Controlling the world's population has been a source of concern to international agencies and demographers, particularly those in developing countries. Nigeria with an estimated population of 167 million is the largest country in Africa and is credited with a low contraceptive use prevalence (15%, all methods) and even a lower prevalence of modern contraceptive (10%).<sup>3,4</sup>

In Nigeria, researches have established that women who reside in northern Nigeria have poorer sexual

and reproductive health indices compared with their counterparts in the southern region,<sup>5,6</sup> and this has been related to lower practice of contraception.<sup>7,8</sup> For instance, northern Nigeria is characterized with high parity women,<sup>9</sup> high maternal and child mortality.<sup>10</sup>

The national surveys previously conducted in Nigeria show that TFR has remained static (5.7),<sup>11</sup> which is higher than the average TFR for sub-Saharan Africa (5.1).<sup>12</sup> It is suggested that northern Nigeria may responsible for this sustained high national TFR and this may not be unrelated to the

low contraceptive use rates in northern Nigeria when compared other regions of the country.

The effect of contraceptive use in a population can be assessed by its impact on the fertility behavior of the population. Consequently the impact of contraceptive use on a community will be elaborated by examining the effects on fertility indices like the adjusted TFR among users and non users of modern contraceptives. Interpretation on effect of contraceptive use on total fertility rates (TFR) may be limited by inherent errors in the data for computing TFR.<sup>12</sup> The adjusted TFR is a better index for assessing fertility than ordinary TFR because it takes into account lifetime fertility with current fertility and also serves as a check on the quality of the data.<sup>13</sup> Investigation into the level of contraceptive use and its influence on fertility in northern Nigeria using this superior demographic indices is lacking. This study assessed the effect of contraceptive use on adjusted TFR in northern Nigeria using Nigeria Demographic and Health Survey (NDHS) 2008 data.

#### Materials and Methods

The data for this study was sourced from the 2008 Nigeria Demographic and Health Survey. The 2008 NDHS is the fourth comprehensive survey conducted in Nigeria as part of the Demographic and Health Surveys (DHS) programme. This survey was carried out by the National population Commission (NPC) with technical assistance from ICF Macro in all stages of the survey and funding from United States Agency for International Development in Nigeria (USAID/Nigeria) and the President's Emergency Plan for AIDS Relief (PEPFAR). The Survey sampled 33,385 women within ages 15-49 years. The current study focused on women section of the data-set with emphasis on Northern Nigeria, the overall number of women included in the analysis was 17031.

The Data set for this study is NGIR51V.SAV and this was obtained from ORC Macro by request through this web site [www.measuredhs.com](http://www.measuredhs.com). The data set was downloaded in the SPSS format. The data for this study was extracted and analysed using Statistical Package for Social Science (SPSS@ version 16.0). Adjusted TFR was calculated manually using the Parity/Fertility (P/F) ratio demographic model as follows:

#### Total Fertility Rate

The total fertility rate (TFR) is the average number of children that would be born alive to a woman (or

a group of women) during her lifetime if she was to pass through all her childbearing years (15-49 years). If the current age-specific fertility rate is experienced throughout the childbearing period. The TFR for the whole northern region was calculated using the formula below

$$\sum_{n=15}^{49} \frac{\text{babies born by age } n}{\text{number of women aged } n} \times 5$$

#### Adjusted TFR

The adjusted TFR was calculated using an indirect approach-the P/F (Parity/Fertility) ratio technique.<sup>14</sup> Assumptions of the model include:

- Fertility for the population under study remained constant for sometime in the past. In Nigeria, the fertility rate can be assumed to be constant since the figure (5.7) remains the same.<sup>25</sup>
- The reported number of children ever born to women in their early ages, say 15-35 is more or less accurately reported. This is possible in Nigeria as younger women were likely to remember and reported the actual number of children they have since the event was still recent and fresh in their memory
- The reported number of births for the previous year may suffer from errors resulting from inaccurate perception by the respondents of the reference period, but these errors are invariant with age.

The Coale and Trussell P/F ratio model, an indirect approach was used and the adjustment technique was based on questions on the total number of children ever born and the number of children born a year preceding the survey. This is done by using the average parities of younger women to obtain a set of fertility rates that is generally more reliable than either of its constituent parts. These information were available in the data set used for this study and thus made the analysis feasible.<sup>15</sup>

**Table 1:** Percentage Distribution of the Respondents who are Sexually Active According to Demographic Characteristics

Characteristic	N=14081	percent
<b>Age</b>		
15-19	1811	12.9
20-24	2644	18.8
25-29	2887	20.5
30-34	2118	15.0
35-39	1781	12.6
40-44	1441	10.2
45-49	1399	9.9
—	29.9 ± 9.2	
<b>Children ever born</b>		
0	1923	13.7
1-2	3524	25.0
3-4	3091	22.0
5+	3543	25.3
Mean CEB±S.D	3.7 ± 3.3	
<b>Living children</b>		
0	2174	15.4
1-2	4269	30.3
3-4	3777	26.8
5+	3861	27.4
Mean number of living children ±S.D	2.9 ± 2.5	
<b>Age at first birth</b>		
10-14	1234	8.8
15-19	7109	50.5
20-24	2918	20.7
25-29	734	5.2
30+	162	1.2
—	1924	13.7
Mean age at first birth±S.D	18.2 ± 3.9	

## Results

A total of 17031 women were sampled out of which 14081 (82.7%) were sexually active while 2950 (17.3%) were not. The demographic characteristics of sexually active respondents are summarized in the table 1. The mean age was  $29.9 \pm 9.2$  and about one-fifth of the sexually-active respondents were between the ages of 25-29 years. Almost 40% of the women had five or more children. The mean children ever born (CEB) was  $3.7 \pm 3.3$ . More than a quarter (27.4%) of sexually-active respondents had five or more living children. About half of the sexually-active respondents had their first birth within the age bracket of 15-19 years.

**Table 2:** Percentage Distribution of sexually active Respondents According to Contraceptive Use Status.

Contraceptive Use	Frequency	Percent
<b>Ever used</b>	1871	13.3%
Current use	636	7.2%
<b>Ever used</b>		
Used only folkloric	83	4.4
Used only traditional	136	7.2
Used modern method	1652	88.3
<b>Total</b>	<b>1871</b>	<b>100.0</b>
<b>Current use</b>		
Used only folkloric	26	4.1
Used only traditional	75	11.8
Modern	535	84.1
<b>Total</b>	<b>636</b>	<b>100.0%</b>

The rate of contraceptive ever-use in the study area was 13.3% while only 7.2% were currently using contraceptive. For ever-use, about 88.3% accounted for modern method while the remaining 11.6% accounted for traditional and folkloric methods while for current use, modern method was 84.1%, see table 2.

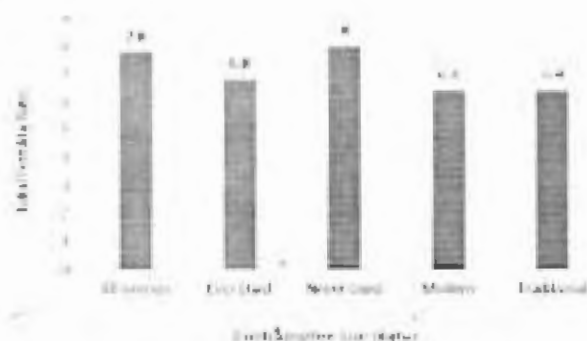


FIGURE 1: Total Fertility Rate for All women By Contraceptive Use in Northern Nigeria

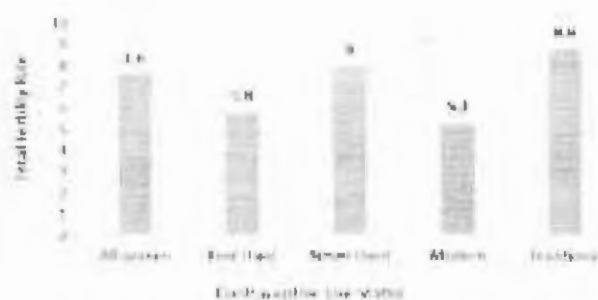


FIGURE 2: Adjusted Total Fertility Rate for All women By Contraceptive Use in Northern Nigeria

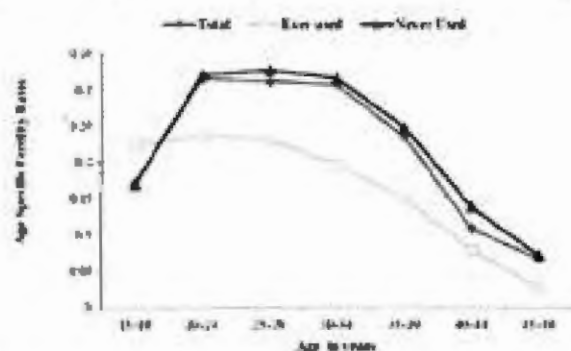


FIGURE 3: Adjusted Age Specific Fertility Rate for Women in Northern Nigeria.

Across all categories except for never users and traditional contraceptive users, the adjusted fertility rates were lower than the ordinary estimates of total fertility rates, see figure 1 and 2. Women who have ever used contraceptive had a lower adjusted TFR of 5.8 as compared with those who never use (about 8). Women who never used any form of contraceptive had higher adjusted Fertility rates across all

childbearing age groups than those who had ever used (figure 3).

DISCUSSION

The overall contraceptive use rate for women in northern Nigeria is still very low however, among current users, modern contraceptives were the most common methods used. This would be encouraging considering the proven efficacy of modern contraceptives when compared to traditional and folkloric methods.<sup>17</sup>

The adjustment in estimation of TFR in this study resulted in a reduction in the TFR (when compared to the ordinary estimation of TFR) across all contraceptive use status except for traditional method where an increase was observed and among never-users where the adjusted TFR and the ordinary TFR were the same. The further lowering of the fertility rates after adjustments for errors in the data inherent in computing ordinary fertility rate provide a more encouraging outlook on the effect of contraceptive use in lowering fertility rates in northern Nigeria.

The results from this study show that the adjusted Total Fertility Rate for women who had ever used any form of contraceptive method in northern Nigeria was 5.8 while for never users; it was about 8 children per woman. Also women who had ever used any form of contraceptive had lower adjusted Fertility rates across all childbearing age groups than those who never used. This shows that contraceptive use indeed has a positive effect in reducing fertility rates. The effective of contraceptive use on adjusted TFR were more pronounced with modern contraceptive use in this study.

The adjusted TFR for northern Nigeria was 7.6 children per woman. This means that at the prevailing age specific fertility rate, a woman in northern Nigeria is expected to have approximately eight children at the end of her reproductive age. This finding would suggest that the policies and programmes aimed at lowering the population growth rate may not have been generally effective. Although the use of modern contraceptive may have been shown to be more effective in reducing fertility rates this study, the impact on the overall fertility indices in northern Nigeria is not appreciable owing to the low contraceptive use rates in northern Nigeria and low male involvement in contraceptive issues.<sup>17</sup> Moreover the use of modern contraceptives among women in northern



Nigeria may probably be aimed more at delaying rather than limiting birth.

In conclusion, the demonstrated positive effect of modern contraceptive use in lowering adjusted TFR and the tendency to progress to higher parities as observed in this study make a strong case for strengthening of family planning intervention programmes in the northern part of Nigeria. If only the contraceptive use rates can be improved, the impact of modern contraceptive use on the fertility rates in northern Nigeria will be more noticeable.

**REFERENCE**

1. United Nations Population Fund (UNFPA). State of the World 2011. ("Retrieved November 22, 2011, from [www.unfpa.org/swp](http://www.unfpa.org/swp)").
2. Population Reference Bureau. World population Data Sheet. ("Retrieved January 17, 2012, from <http://www.prb.org/Publications/Datasheets/2012/world-population-data-sheet.aspx>").
3. National population commission. Legal Notice on Publication of the Details of the Breakdown of the Nigerian National and State Provisional Totals 2006 Census. ("Retrieved August 16, 2010, from [www.nigerianstat.gov.ng](http://www.nigerianstat.gov.ng)").
4. Nigeria Demographic and Health Survey 2008. Calverton, Maryland: National Population Commission and ORC/Macro
5. Nigeria Demographic and Health Survey 2003. Calverton, Maryland: National Population Commission and ORC/Macro.
6. Izugbara, CO, Ezech, AC. Women and high Fertility in Islamic Northern Nigeria. *Studies in Family Planning* 2010; 41(3): 193-204.
7. Feyisetan, B, Casterline, JB. Fertility Preferences and Contraceptive Change in Developing Countries. *International Family Planning Perspectives* 2000; 26(3):100-109.
8. Abiodun, OM, Balogun, OR. Sexual activity and contraceptive use among young female students of tertiary educational institution in Ilorin, Nigeria. *Contraception* 2009; 79:146-149
9. Ibisomi, L. Improving contraceptive use in northern Nigeria: Could male involvement make a difference? Proceedings of the 26<sup>th</sup> IUSSP International Population Conference

2009. ("Retrieved October 29, 2015, from <http://iussp2009.princeton.edu/download.aspx?submissionId=91613>).
10. Duze, MC, Mohammed, IZ. Male knowledge, attitude, and family planning practices in northern Nigeria. *African Journal of Reproductive Health* 2006;10(3): 53-65
11. Nwizu EN, Iiyasu Z, Ibrahim SA, Galadanci HS. Socio-demographic and maternal factors in anaemia in pregnancy at booking in kano, Northern Nigeria. *African Journal of Reproductive Health* 2011; 15(4):33-41
12. Goliber, T, Sanders, R, Ross, J. Analyzing Family Planning Needs in Nigeria: Lessons for Repositioning Family Planning in Sub-Saharan Africa. Washington, DC 2009. ("Retrieved October 29, 2015, from [http://www.healthpolicyinitiative.com/Publications/Documents/996\\_1\\_Nigeria\\_FamPlan\\_FINAL\\_12\\_3\\_09\\_acc.pdf](http://www.healthpolicyinitiative.com/Publications/Documents/996_1_Nigeria_FamPlan_FINAL_12_3_09_acc.pdf))
13. Moultrie, TA, and Timaeus, IM. Trends in South African fertility between 1970 and 1988. *South African Medical Research* 2002; 3:5-12.
14. United Nations. 1983, Manual X, Indirect Techniques for Demographic estimation. ("Retrieved October 29, 2015, from [http://www.un.org/en/development/desa/population/publications/pdf/mortality/Manual\\_X.pdf](http://www.un.org/en/development/desa/population/publications/pdf/mortality/Manual_X.pdf))
15. Adebowale, SA, Fagbamigbe, FA, Bamgboye, EA.. Contraceptive Use: Implication for Completed Fertility, Parity Progression and Maternal Nutritional Status in Nigeria. *African Journal of Reproductive Health* 2011; 15.(4):60-67
16. UNFPA Nigeria Country Office Publication. Nigeria Family Planning Analysis: Selected Demographic and Socioeconomic Variables. ("Retrieved February 19, 2014, from <http://nigeria.unfpa.org/pdf/fpanalysis.pdf>).
17. Stewart, M, Menamee K, Harvey, C. Traditional methods, Sterilization and Emergency Contraception: Medicine today 2013, 14(9): 55.
18. Mutahir JT, Pam VC. Overview of contraceptive use in Jos University Teaching Hospital, north central Nigeria. *Niger J Clin Pract.* 2008 Jun;11(2):139-43