

## ORIGINAL RESEARCH ARTICLE

# Fertility intentions among men in rural and urban communities in Osun State, Nigeria- A comparative study

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Kolawole Sodeinde<sup>1</sup>, Kofoworola Odeyemi<sup>2</sup>, Sonnen Atinge<sup>3\*</sup>, Oluwafunmilola Biobaku<sup>4</sup>, Ngozi Adefala<sup>1</sup>, Adebola Omotosho<sup>1</sup>, Abiodun Osinaike<sup>1</sup>, Aderinsola Faturoti<sup>1</sup>, Damilotun Awoyale<sup>5</sup>, and Judith Ikpeazu<sup>6</sup>

Department of Community Medicine, Babcock University, Ilishan-Remo, Ogun State, Nigeria<sup>1</sup>; Department of Community Health and Primary Care, University of Lagos, Lagos State, Nigeria<sup>2</sup>; Department of Community Medicine, Federal University Wukari, Taraba State, Nigeria<sup>3</sup>; Department of Obstetrics and Gynaecology, Tathleeth General Hospital, Tathleeth Bisha, Aseer Region, Saudi Arabia<sup>4</sup>; Department of Public Health and Preventive Medicine, University of Alberta, Canada<sup>5</sup>. Asokoro District Hospital, Abuja, Nigeria<sup>6</sup>

\*For Correspondence: Email: [sonnen.atinge@gmail.com](mailto:sonnen.atinge@gmail.com)

## Abstract

Though women are usually targeted for contraception use, fertility decisions are mostly taken by the man, who is more likely to have more children in many developing countries. This study, therefore, aimed to assess and compare fertility intentions among men in rural and urban areas of Osun State, Nigeria. This comparative cross-sectional study was conducted among 400 men in rural and urban areas of Osun State. Data collection was done using semi-structured interviewer-administered questionnaires. The mean age of the rural respondents was  $40.35 \pm 9.137$  years, while that of the urban respondents was  $42.62 \pm 9.130$  years ( $t = -3.526$ ,  $P < 0.001$ ). Age (AOR = 2.589, 95% C.I = 1.476 – 4.540), education (AOR = 0.478, 95% C.I = 0.287 -0.797), religion (AOR = 2.671, 95% C.I = 1.694 – 4.214) and number of living children (AOR = 2.411, 95% C.I = 1.381 – 4.211) predicted fertility intentions in the urban areas. (*Afr J Reprod Health 2025; 29 [10]: 176-186*).

**Keywords:** Men; Children; Family Size; Desire

## Résumé

Bien que les femmes soient généralement ciblées pour l'utilisation de la contraception, les décisions en matière de fertilité sont principalement prises par l'homme, qui est plus susceptible d'avoir plus d'enfants dans de nombreux pays en développement. Cette étude visait donc à évaluer et à comparer les intentions de fertilité des hommes des zones rurales et urbaines de l'État d'Osun, au Nigéria. Cette étude transversale comparative a été menée auprès de 400 hommes des zones rurales et urbaines de l'État d'Osun. La collecte de données a été effectuée à l'aide de questionnaires semi-structurés administrés par un intervieweur. L'âge moyen des répondants ruraux était de  $40,35 \pm 9,137$  ans, tandis que celui des répondants urbains était de  $42,62 \pm 9,130$  ans ( $t = -3,526$ ,  $P < 0,001$ ). L'âge (AOR = 2,589, IC à 95 % = 1,476 – 4,540), l'éducation (AOR = 0,478, IC à 95 % = 0,287 -0,797), la religion (AOR = 2,671, IC à 95 % = 1,694 – 4,214) et le nombre d'enfants vivants (AOR = 2,411, IC à 95 % = 1,381 – 4,211) prédisaient les intentions de fécondité dans les zones urbaines. (*Afr J Reprod Health 2025; 29 [10]: 176-186*).

**Mots-clés:** Hommes; Enfants; Taille de la famille; Désir

## Introduction

Less developed countries are responsible for more than two-thirds of the world's population of over 7 billion people,<sup>1</sup> which is estimated to reach about 10 billion in 2050.<sup>2</sup> In a similar vein, almost all of the estimated increase is expected to occur in the developing regions of the world, with about half coming from Africa.<sup>2</sup> In Sub-Saharan Africa (SSA), fertility levels have persistently flouted government birth control efforts, with constant population

increase<sup>3</sup> presently at a rate of 2.53% per annum.<sup>4</sup> Nigeria is the biggest contributor to this rapid, unplanned population growth in SSA, with its population of 206 million and a growth rate of 2.58, higher than the rest of SSA.<sup>5</sup> Low contraception use and high parity among Nigerian women<sup>6-8</sup> are responsible for the large population in the country, and also contribute to poor maternal and child health outcomes.<sup>9,10</sup>

Though women are traditionally targeted more for contraception use,<sup>11</sup> fertility decisions are

mostly taken by the man, who is more likely to have many children.<sup>7</sup> The Nigerian Government's maiden edition of the Nigerian National Population Policy in 1988 also identified men as the family head who decides on family size, health matters, and other related issues.<sup>12</sup> National demographic health surveys from Nigeria and Niger, which form the northern boundary of the country, both show that fertility intentions among men are high,<sup>7,13</sup> and this puts the woman at high risk of unfavourable obstetric outcomes.<sup>6,9,10</sup> The rising fertility levels in sub-Saharan Africa have challenged explanatory efforts by policymakers and researchers, unlike in most developed countries with low fertility levels, which are even below replacement levels.<sup>14,15</sup> It can therefore be checked if the fertility intention of men who make decisions on reproductive health and other matters is regulated.

However, few studies in Nigeria have focused on men's fertility intentions compared to the studies among women. Yet fewer studies have made rural and urban comparisons, bearing in mind that demographic, economic, and sociocultural variations exist among rural and urban populations.<sup>7</sup> This study, therefore, aims to assess and compare fertility intentions and associated factors among men in rural and urban areas of Osun State, Nigeria. It is believed that findings from this study will help policymakers and other stakeholders make relevant interventions for better male fertility decisions that ultimately enhance healthy population control and improve health indices, especially for women and children, and indeed build a nation of healthy individuals who are socially and economically productive. The data from the study will also serve as baseline data for further studies seeking to understand fertility intentions among men in rural or urban settings.

## Methods

### *Study area*

The study was conducted in Osun State, one of the six states in the Southwestern region of Nigeria. Osun State was created in 1991; the state has its capital in Osogbo and is bounded to the west by Oyo State, to the south by Ogun State, to the north by

Kwara State, and to the east by Ekiti State. It covers a land area of 9251 km<sup>2</sup> with a projected population of about 4.7 million in 2016. The state is divided into thirty Local Government Areas (LGAs), 17 rural and 13 urban areas. The people of Osun State are predominantly Yoruba. The adult literacy rate (for any language) in the state has been reported to be 70.0%.<sup>16</sup> Several agencies are involved in family and reproductive health in the state. These agencies include the United Nations Children's Fund (UNICEF), World Health Organisation (WHO), Society for Family Health (SFH), and United States Agency for International Development (USAID), usually in collaboration with the state's Ministry of Health. Family planning services are rendered in various primary and secondary health facilities within the state.

### *Study design*

The research was a community-based analytical cross-sectional study to investigate fertility intentions among men in Osun State, Nigeria.

### *Study population*

The study was conducted among married men who had been married for at least 6 months and were living with their spouses/partners in rural and urban areas of Osun State, Nigeria as at the time of the study. Men who were on temporary visits to the communities were excluded from the study.

### *Sample size determination*

Using a power of 80% with a confidence level of 95%, the required minimum sample size was calculated from the formula to compare proportions between two groups.<sup>17</sup>  $n$  (each group) =  $(Z_{\alpha} + Z_{\beta})^2 (p_1q_1 + p_2q_2) / (p_1 - p_2)^2$ . Given  $n$  = the required minimum sample size in each group,  $Z_{\alpha}$  is the standard normal deviate corresponding to 5% level of significance which is 1.96 (for 95% confidence interval),  $Z_{\beta}$  = standard normal deviate corresponding to 20% level of significance,  $\beta$  at power of 80% = 0.84,  $p_1$  = proportion of prevalence of the attribute in population 1,  $p_2$  = proportion of prevalence of the attribute in population 2,  $q_1$  =

proportion of failure in population 1 =  $1 - q_1$ ,  $q_2$  = proportion of failure in population 2 =  $1 - p_2$ . In a Nigerian study which compared family planning use among men in urban and rural areas,<sup>18</sup>  $p_1$  was given at 54.0% = 0.54 and  $p_2$  = 41.3% = 0.413. The calculated sample size ( $n$ ) was therefore = 241.1. After adjusting for a 20% rate of non-responses and invalid responses, the final sample size was 301. A sample size of 400 men was, however, included in the study for each arm, thereby making a total of 800 men.

### ***Sampling technique***

A multistage sampling method was used to select participants for the study. Osun State consists of three senatorial districts: Osun East, Osun Central, and Osun West. In stage 1, simple random sampling was used to select one senatorial district. Osun Central Senatorial District was selected. The senatorial district consists of ten LGAs segregated into five rural LGAs, namely Boluwaduro, Boripe, Ifedayo, Odo-Otin, and Orolu and five urban LGAs, namely Ifelodun, Ila, Irepodun, Olorunda, and Osogbo.<sup>19</sup> In stage 2, simple random sampling (balloting) was used to select an urban and rural LGA in the selected senatorial district. Osogbo LGA was selected as an urban LGA, while Odo-Otin LGA was selected as a rural LGA. In stage 3, simple random sampling (balloting) was also used to select 5 wards each from the selected rural and urban LGAs, giving a total of 10 wards. For Osogbo LGA, Ataoja C, Ata Oja D, Alagba, Otun Balogun A, and Jagun A wards were selected, while Asi/Asaba, Ore Agbeye, Jagun Osi, Olukotun, and Olunisa wards were selected in Odo Otin LGA. In stage 4, simple random sampling (balloting) was used to select two settlements from each selected ward. This gave a total of 20 settlements for the study. Houses/households with eligible individuals in the selected settlements were included in the interview till the sample sizes were reached. In single-household houses, the household head was interviewed if he was eligible. In multiple household houses, one household was selected using simple random sampling, and the eligible household head was selected as the respondent.

### ***Data collection instrument and methods***

A semi-structured interviewer-administered questionnaire was used to elicit data from the respondents. The instrument was constructed from the Nigerian Demographic Health Survey 2018 and a review of available literature on family planning/contraception and the role of men in Maternal and Child Health. The questionnaire was translated into Yoruba, the indigenous language, so that the respondents could understand the questions better. It was also translated back into the English language to ensure that the questions did not lose their original meaning. There was a pre-test of the questionnaire on 30 married men who were residing with their wives in Ogun State, which was in the same geo-political zone as the study area. Amendments were made to the parts of the questionnaire that were found to be ambiguous or that lacked clarity. Cronbach's Alpha reliability test for the items measuring the main outcome variable (fertility intention) was also calculated, and a score of 0.7 was obtained. All these were to ensure the reliability and validity of the research instrument. Six research assistants who had at least an Ordinary National Diploma (OND) were trained for three hours daily for two days, as coordinated by the principal investigator and subsequently enlisted in the research.

### ***Data management and analysis***

The Statistical Package for Social Sciences (SPSS) version 22.0 was used for data analysis and statistical calculation. Fertility intention, the dependent variable, was assessed by asking whether the men wanted more children in addition to the ones they already had, with a yes or no option provided. The independent variables included the respondent's age (as of their last birthday), educational status, marital status, type of marriage, duration of marriage, number of living children, occupation, religion, ethnicity, and place of residence. Continuous data were summarised using mean, standard deviation, and proportions, while categorical data were presented as frequency tables and charts. Chi-squares were used to test for

associations between the categorical variables (place of residence, type of marriage, occupation, religion, and ethnicity), while the student's t-test was used for comparison between means. Logistic regression was used to analyse factors responsible for fertility intentions after controlling for confounding. These factors were variables which were statistically significant ( $<0.05$ ) during bivariate analysis. The level of significance was set at 95% confidence interval with p-value = 0.05.

### **Ethical considerations**

Ethical approval for this study was obtained from the Babcock University Health Research and Ethics Committee (BUHREC) (BUHREC 234/23) and the Health Planning, Research, and Statistics Department of the Osun State Ministry of Health (OSHREC/PRS/569T/404). Administrative authorisation was also obtained from the Medical Officers of Health of the selected local governments. Verbal and written informed consents were obtained from the respondents, and strict confidentiality of all information and findings was maintained throughout the study. Participation was entirely voluntary, and the participants were free to withdraw from the study without any negative consequences

### **Results**

The mean age of the rural respondents was  $40.35 \pm 9.137$  years, while the mean age of the urban respondents was  $42.62 \pm 9.130$  years. The difference in the mean ages of the rural and urban residents was statistically significant ( $t = -3.526$ ,  $P < 0.001$ ). Only about two-fifths (38.0%) of the respondents in the rural communities had some form of tertiary education as the highest academic attainment, as compared to about three-fifths (59.0%) of the respondents dwelling in the urban communities who were educated up to the tertiary level. Only a few respondents (5.2% rural and 2.8% urban) had no formal education. The association between educational status and place of residence was statistically significant ( $\chi^2 = 37.074$ ,  $P < 0.001$ ). More than half (51.2%) of the respondents living in the rural areas had at least four (4) living children as opposed to less than one-third (30.8%) of the respondents in the urban areas who had four (4)

children or more. The association between the number of living children and place of residence was also statistically significant ( $\chi^2 = 34.746$ ,  $P < 0.001$ ) (Table 1).

A statistically significantly higher proportion of men in the urban areas (57.4%) had ever desired more children than men in the rural areas ( $\chi^2 = 5.357$ ,  $P = 0.021$ ). Similarly, a statistically significantly higher proportion of men in the urban areas (61.3%) agreed with wife on the number of children to have as compared to men in the rural areas (36.8%) ( $\chi^2 = 48.039$ ,  $P < 0.001$ ). A higher proportion of respondents in the urban areas (31.5%) also ever had sex preference for intended children as compared to 27.8% of respondents from the rural areas (27.8%). However, there was no statistically significant association between sex preference and place of residence ( $\chi^2 = 1.349$ ,  $P = 0.245$ ). A higher proportion of men who have ever had a sex preference for intended children in the rural areas (80.2%) wanted male children as opposed to 77.0% of their counterparts in the urban areas who wanted male children (Table 2).

Age was statistically significantly associated with the intentions of having more children in the urban areas ( $\chi^2 = 25.329$ ,  $p < 0.001$ ) and not in the rural areas, with more younger men having the desire for more children in the urban areas. Educational Status was statistically significantly associated with the intentions of having more children in the urban areas ( $\chi^2 = 8.109$ ,  $p = 0.004$ ), with men having no tertiary education showing more desire for more children. However, no statistically significant association existed between educational status and the intention of having more children in rural areas. Religion was found to be statistically significantly associated with fertility intentions among men in urban areas ( $\chi^2 = 13.202$ ,  $p < 0.001$ ), as compared to what was obtained in rural where there was no association between religion and fertility intentions ( $\chi^2 = 3.526$ ,  $p = 0.060$ ). More non-Christians desired more children in the urban areas compared to those who were Christians. The number of living children was statistically significantly associated with the desire for more children in urban areas ( $\chi^2 = 14.993$ ,  $p < 0.001$ ), with more men who had fewer children desiring more children in the urban areas.

**Table 1:** Socio-demographic characteristics of respondents.

| Variable                            | Rural (n= 400)n (%)  | Urban (n= 400) n (%) | Test Statistics               |
|-------------------------------------|----------------------|----------------------|-------------------------------|
| <b>Age Group (Years)</b>            |                      |                      |                               |
| 20 - 29                             | 59 (14.8)            | 15 (3.8)             |                               |
| 30 - 39                             | 173 (43.3)           | 140 (35.0)           |                               |
| 40 - 49                             | 119 (29.7)           | 164 (41.0)           |                               |
| 50 - 59                             | 30 (7.5)             | 57 (14.2)            |                               |
| ≥ 60                                | 19 (4.7)             | 24 (6.0)             |                               |
| <b>Mean</b>                         | <b>40.35 ± 9.137</b> | <b>42.62 ± 9.130</b> | <b>t= -3.526, p&lt; 0.001</b> |
| <b>Type of Marriage</b>             |                      |                      |                               |
| Monogamy                            | 346 (86.5)           | 366 (91.5)           |                               |
| Polygamy                            | 54 (13.5)            | 34 (8.5)             | $\chi^2 = 5.107, p = 0.024$   |
| <b>Highest Educational Status</b>   |                      |                      |                               |
| No formal education                 | 21 (5.2)             | 11 (2.8)             |                               |
| Primary                             | 67 (16.8)            | 54 (13.4)            |                               |
| Secondary                           | 160 (40.0)           | 99 (24.8)            |                               |
| Tertiary                            | 152 (38.0)           | 236 (59.0)           | $\chi^2 = 37.074, p < 0.001$  |
| <b>Occupation</b>                   |                      |                      |                               |
| Unemployed                          | 16 (4.0)             | 9 (2.3)              |                               |
| Unskilled                           | 95 (23.8)            | 70 (17.5)            |                               |
| Semi-skilled                        | 111 (27.8)           | 100 (25.0)           |                               |
| Skilled                             | 147 (36.8)           | 157 (39.3)           |                               |
| Professional                        | 31 (7.8)             | 64 (16.0)            | $\chi^2 = 18.113, p = 0.001$  |
| <b>Religion</b>                     |                      |                      |                               |
| Christianity                        | 224 (56.0)           | 209 (52.3)           |                               |
| Islam                               | 166 (41.5)           | 189 (47.2)           |                               |
| Traditional Religion                | 10 (2.5)             | 2 (0.5)              | $\chi^2 = 7.343, p = 0.025$   |
| <b>Ethnicity</b>                    |                      |                      |                               |
| Yoruba                              | 371 (92.8)           | 367 (91.8)           |                               |
| Hausa                               | 10 (2.5)             | 8 (2.0)              |                               |
| Igbo                                | 10 (2.5)             | 13 (3.3)             |                               |
| Others                              | 9 (2.3)              | 12 (3.0)             | $\chi^2 = 1.064, p = 0.786$   |
| <b>Duration of Marriage (Years)</b> |                      |                      |                               |
| ≤ 5                                 | 97 (24.3)            | 89 (22.3)            |                               |
| 6-10                                | 120 (30.0)           | 138 (34.5)           |                               |
| 11-15                               | 75 (18.8)            | 75 (18.8)            |                               |
| ≥16                                 | 108 (27.0)           | 98 (24.5)            | $\chi^2 = 2.085, p = 0.555$   |
| <b>No. of Living Children</b>       |                      |                      |                               |
| ≤ 3                                 | 195 (48.8)           | 277 (69.3)           |                               |
| ≥ 4                                 | 205 (51.2)           | 123 (30.8)           | $\chi^2 = 34.746, p < 0.001$  |
| <b>Monthly Income (Naira)</b>       |                      |                      |                               |
| ≤ 49,999                            | 210 (52.5)           | 117 (29.3)           |                               |
| 50,000 - 99,999                     | 122 (30.5)           | 149 (37.3)           |                               |
| 100,000 - 199,999                   | 47 (11.8)            | 105 (26.3)           |                               |
| ≥ 200,000                           | 21 (5.3)             | 28 (7.0)             | $\chi^2 = 52.270, p < 0.001$  |

**Table 2:** Fertility Intentions among Men in Urban and Rural Areas

| Variable   | Rural<br>(n=400)<br>n (%) | Urban<br>(n=400)<br>n (%) | Test Statistics              |
|--|---------------------------|---------------------------|------------------------------|
| A desire for more children besides the ones you currently have                 | 197 (49.3)                | 228 (57.4)                | $\chi^2 = 5.357, P = 0.021$  |
| Agreed with wife on the number of children                                     | 147 (36.8)                | 245 (61.3)                | $\chi^2 = 48.039, P < 0.001$ |
| Has ever had a sex preference for the intended child(ren)                      | 111 (27.8)                | 126 (31.5)                | $\chi^2 = 1.349, P = 0.245$  |
| <b>Sex of Preferred child (Rural n=111; Urban n=126)</b>                       |                           |                           |                              |
| Male   | 89 (80.2)                 | 97 (77.0)                 | $\chi^2 = 0.357, P = 0.550$  |
| Female   | 22 (19.8)                 | 29 (23.0)                 |                              |
| <b>Magnitude of the problem of more children in terms of the wife's health</b> |                           |                           |                              |
| Big Problem  | 108 (27.0)                | 63 (15.8)                 | $\chi^2 = 28.165, P < 0.001$ |
| Small Problem  | 168 (42.0)                | 145 (36.3)                |                              |
| No Problem   | 124 (31.0)                | 192 (48.0)                |                              |
| <b>Magnitude of the problem of more children in terms of family care</b>       |                           |                           |                              |
| Big Problem  | 160 (40.0)                | 75 (18.8)                 | $\chi^2 = 46.705, P < 0.001$ |
| Small Problem  | 146 (36.5)                | 173 (43.3)                |                              |
| No Problem   | 94 (23.5)                 | 152 (38.0)                |                              |

**Table 3:** Factors associated with desire for more children in addition to present children

| Variable                             | Rural (n = 400)<br>Desire for more children |            | Urban (n = 400)<br>Desire for more children |            |
|--------------------------------------|---|------------|---|------------|
|                                      | Yes   | No         | Yes   | No         |
| <b>Age Group (Years)</b>             |   |            |   |            |
| ≤ 39                                 | 121 (52.2)                                  | 111 (47.8) | 112 (73.2)                                  | 41 (26.8)  |
| ≥ 40                                 | 76 (45.2)                                   | 92 (54.8)  | 116 (47.5)                                  | 128 (52.5) |
| <b><math>\chi^2</math> (P Value)</b> | <b>1.865 (0.172)</b>                        |            | <b>25.329 (&lt; 0.001)</b>                  |            |
| <b>Type of Marriage</b>              |   |            |   |            |
| Monogamy                             | 170 (49.1)                                  | 176 (50.9) | 205 (56.5)                                  | 158 (43.5) |
| Polygamy                             | 27 (50.0)                                   | 27 (50.0)  | 23 (67.6)                                   | 11 (32.4)  |
| <b><math>\chi^2</math> (P Value)</b> | <b>0.014 (0.906)</b>                        |            | <b>1.587 (0.208)</b>                        |            |
| <b>Highest Educational Status</b>    |   |            |   |            |
| Tertiary                             | 67 (44.1)                                   | 85 (55.9)  | 120 (51.5)                                  | 113 (48.5) |
| Non-Tertiary                         | 130 (52.4)                                  | 118 (47.6) | 108 (65.9)                                  | 56 (34.1)  |
| <b><math>\chi^2</math> (P Value)</b> | <b>2.623 (0.105)</b>                        |            | <b>8.109 (0.004)</b>                        |            |
| <b>Occupation</b>                    |   |            |   |            |
| Employed                             | 187 (48.7)                                  | 197 (51.3) | 221 (57.0)                                  | 167 (43.0) |
| Unemployed                           | 10 (62.5)                                   | 6 (37.5)   | 7 (77.8)                                    | 2 (22.2)   |
| <b><math>\chi^2</math> (P Value)</b> | <b>1.171 (0.279)</b>                        |            | <b>1.559 (0.212)</b>                        |            |
| <b>Religion</b>                      |   |            |   |            |
| Christian                            | 101 (45.1)                                  | 123 (54.9) | 101 (48.8)                                  | 106 (51.2) |

| Variable                             | Rural (n = 400)          |            | Urban (n = 400)            |            |
|--------------------------------------|--------------------------|------------|----------------------------|------------|
|                                      | Desire for more children |            | Desire for more children   |            |
|                                      | Yes                      | No         | Yes                        | No         |
| <b>Age Group (Years)</b>             |                          |            |                            |            |
| Non-Christian                        | 96 (54.5)                | 80 (45.5)  | 127 (66.8)                 | 63 (33.2)  |
| <b><math>\chi^2</math> (P Value)</b> | <b>3.526 (0.060)</b>     |            | <b>13.202 (&lt; 0.001)</b> |            |
| <b>Ethnicity</b>                     |                          |            |                            |            |
| Yoruba                               | 183 (49.3)               | 188 (50.7) | 208 (57.0)                 | 157 (43.0) |
| Non-Yoruba                           | 14 (48.3)                | 15 (51.7)  | 20 (62.5)                  | 12 (37.5)  |
| <b><math>\chi^2</math> (P Value)</b> | <b>0.012 (0.913)</b>     |            | <b>0.366 (0.545)</b>       |            |
| <b>Duration of Marriage (Years)</b>  |                          |            |                            |            |
| ≤ 9                                  | 100 (54.6)               | 83 (45.4)  | 126 (66.0)                 | 65 (34.0)  |
| ≥ 10                                 | 97 (44.7)                | 120 (55.3) | 102 (49.5)                 | 104 (50.5) |
| <b><math>\chi^2</math> (P Value)</b> | <b>3.928 (0.047)</b>     |            | <b>10.975 (0.001)</b>      |            |
| <b>No of Living Children</b>         |                          |            |                            |            |
| ≤ 3                                  | 102 (52.3)               | 93 (47.7)  | 175 (63.9)                 | 99 (36.1)  |
| ≥ 4                                  | 95 (46.3)                | 110 (53.7) | 53 (43.1)                  | 70 (56.9)  |
| <b><math>\chi^2</math> (P Value)</b> | <b>1.423 (0.233)</b>     |            | <b>14.993 (&lt; 0.001)</b> |            |
| <b>Monthly Income (Naira)</b>        |                          |            |                            |            |
| ≤ 99,999                             | 170 (51.2)               | 162 (48.8) | 168 (63.4)                 | 97 (36.6)  |
| ≥ 100,000                            | 27 (39.7)                | 41 (60.3)  | 60 (45.8)                  | 71 (54.2)  |
| <b><math>\chi^2</math> (P Value)</b> | <b>2.986 (0.084)</b>     |            | <b>11.110 (0.001)</b>      |            |

**Table 4:** Predictors of fertility intentions among men in rural and urban areas

| Variable                            | Adjusted Odds Ratio | Rural Confidence Interval | P-Value | Adjusted Odd Ratio | Urban Confidence Interval | P Value |
|-------------------------------------|---------------------|---------------------------|---------|--------------------|---------------------------|---------|
| <b>Age Group (Years)</b>            |                     |                           |         |                    |                           |         |
| ≤ 39                                |                     |                           |         | 2.589              | 1.476 – 4.540             | 0.001   |
| ≥ 40                                |                     |                           |         | 1.000              |                           |         |
| <b>Type of Marriage</b>             |                     |                           |         |                    |                           |         |
| Monogamy                            | 1.000               |                           |         |                    |                           |         |
| Polygamy                            | 1.006               | 0.546 – 1.852             | 0.985   |                    |                           |         |
| <b>Highest Educational Status</b>   |                     |                           |         |                    |                           |         |
| Tertiary                            | 1.000               |                           |         | 0.478              | 0.287 – 0.797             | 0.005   |
| Non-Tertiary                        | 0.731               | 0.437 – 1.224             | 0.234   | 1.000              |                           |         |
| <b>Religion</b>                     |                     |                           |         |                    |                           |         |
| Christian                           |                     |                           |         | 1.000              |                           |         |
| Non-Christian                       |                     |                           |         | 2.671              | 1.694 – 4.214             | < 0.001 |
| <b>Duration of Marriage (Years)</b> |                     |                           |         |                    |                           |         |
| ≤ 9                                 |                     |                           |         | 1.011              | 0.581 – 1.760             | 0.969   |
| ≥ 10                                |                     |                           |         | 1.000              |                           |         |
| <b>No. of Living Children</b>       |                     |                           |         |                    |                           |         |
| ≤ 3                                 | 1.395               | 0.920 – 2.115             | 0.117   | 2.411              | 1.381 – 4.211             | 0.002   |

| Variable               | Adjusted Odds Ratio | Rural Confidence Interval | P-Value | Adjusted Odd Ratio | Urban Confidence Interval | P Value |
|------------------------|---------------------|---------------------------|---------|--------------------|---------------------------|---------|
| ≥ 4                    | 1.000               |                           |         | 1.000              |                           |         |
| Monthly Income (Naira) |                     |                           |         |                    |                           |         |
| ≤ 99,999               |                     |                           |         | 1.309              | 0.795 – 2.157             | 0.290   |
| ≥ 100,000              |                     |                           |         | 1.000              |                           |         |

In the rural area, there was no association between the number of living children and fertility desires ( $\chi^2 = 1.423$   $p = 0.233$ ). Similarly, income was statistically significantly associated with the desire for more children in urban areas ( $\chi^2 = 11.110$ ,  $p = 0.001$ ) as compared to the rural area, where there was no association between income and fertility desires ( $\chi^2 = 2.986$ ,  $p = 0.084$ ). In urban areas, a higher proportion of men who earned less desired more children than those who earned higher amounts (Table 3). With logistic regression, age (AOR = 2.589, 95% C.I = 1.476 – 4.540), level of education (AOR = 0.478, 95% C.I = 0.287 – 0.797), religion (AOR = 2.671, 95% C.I = 1.694 – 4.214) and number of living children (AOR = 2.411, 95% C.I = 1.381 – 4.211) were significant predictors of desiring for more children among men residing in the urban area while there were no significant predictors found for desiring more children among men (Table 4).

## Discussion

This current study showed that the urban participants were significantly older and more educated than the rural participants. Most of the participating men in both rural and urban communities had formal education. This finding concurred with what was reported in several other studies carried out among men in the southern part of Nigeria, which showed high proportions of formal education among men in the region.<sup>20–23</sup> There were, nevertheless, more men in the urban area with formal education than in the rural areas. This aligned with what was reported in the country's demographic and health survey, where higher proportions of men living in the urban areas had formal education compared to men in the rural areas.<sup>7</sup> Reports from other Nigerian studies have also reported that men in urban areas have more formal

education than those in rural areas.<sup>24–26</sup> Literacy levels among men in the urban and rural communities of the country have been reported to be 86.4% and 59.5% respectively.<sup>27</sup> Similar findings have also been reported in other parts of the world. For instance, in Nepal, the average number of years of schooling among men in urban areas was reported to be more than twice that of men in rural areas.<sup>28</sup> In Norway, higher proportions of urban residents were educated compared to rural residents, the inequality being more pronounced among men.<sup>29</sup>

The findings in this study also showed that participants in rural areas had more children than participants in urban areas, agreeing with the reports of the country's demographic and health survey.<sup>7</sup> This also agreed with the findings from a survey conducted among sixty (60) developing countries across Africa, Asia, and Latin America, which reported higher fertility rates in the rural areas across the regions.<sup>30</sup> Another assessment of the demographic health survey of eighty-seven countries revealed that the fertility rate of urban areas was only 70% of that of rural areas.<sup>31</sup> A higher number of children among men in the rural area in this current study compared to urban areas might be because more men and their partners in the urban areas were utilising contraceptives. Fertility rates have been documented to have a negative correlation with contraceptive use.<sup>31</sup> Besides, a higher proportion of the rural participants were in polygamous relationships compared to men in the urban areas, and this could have contributed to the increased number of children among these men who had children from multiple women. Furthermore, it has been documented that rural dwellers usually opt for more children since they consider children as a source of labour and wealth.<sup>32</sup>

The implication of having more children in rural areas may include a poor quality of life among

members of the household, since the people might have produced several children, and they cannot effectively take care of. Moreover, this study revealed that the men living in rural areas had lower incomes compared to those in urban areas. These children may also be at risk of poor health status as a result of insufficient parental care, with the background of poor infrastructure and health care delivery, which characterises many rural settings. Research has shown that rural areas are usually associated with poor availability of healthcare, low levels of comfort, poor social amenities, and unfavourable working conditions, leading to an overall poor quality of life when compared with those living in urban settings.<sup>33</sup> These inadequate medical and social amenities constitute stressors that are significantly associated with the quality of life of rural dwellers.<sup>34</sup>

In this current study, a higher proportion of men in the urban area desired to have more children besides the one they already had compared to rural men. The proportions of men who desired more children in rural and urban areas were less than what was reported by Nigeria's demographic health survey, where about eight in every ten men were reported to desire more children.<sup>7</sup> It was also less than what was reported by Almeida Santos in Portugal, who reported that 96% of the sampled men and women wanted more children.<sup>35</sup> Men in underdeveloped countries tend to desire more children and prefer to have male children.<sup>7,36</sup> Unlike this study, in which men in urban areas were reported to want more children, rural men are usually described as desiring more children.<sup>7</sup> The desire of urban men for more children may be because they had fewer children and probably had not completed their families. However, compared to urban areas in this current study, more men in rural areas wanted more male children, which agreed with what was reported in the literature.<sup>37</sup>

Only 36.8% of rural dwellers agreed with their wives on the number of children, while three-fifths of men in the urban area agreed with their wives on the number of children to have. Other studies have also shown discordant rates among couples concerning fertility desires. For instance, in Ethiopia, Tilahun reported that less than one-third of men disagreed with their spouses concerning the

number of children they should have, while almost half disagreed on sex preference.<sup>36</sup> In this current study, age, education, religion, and the number of living children were predictors of fertility desires in the urban area, while no significant predictor was found in the rural area. Similar predictors were reported by Gotmark and Andersson in a survey across continents.<sup>38</sup> These findings call for a need for government, Non-Governmental Organisations and other stakeholders in education to create more schooling opportunities, especially at the post-secondary level, for young people. Higher education will be helpful to improve the literacy levels of young men in partly preparing them for the right reproductive health choices, including fertility desires in future.

This study is not without limitations. First, the cross-sectional design of the study did not allow the assessment of true temporal relationships between the participants' characteristics and fertility desires. Also, information was obtained from the participants by self-report, which may lead to under-reporting or over-reporting of activities relating to contraceptive choices and utilisation.

## Conclusion

The urban residents were significantly older and more educated than the rural residents. However, men in the rural area had more children than those in the urban area. A statistically significantly higher proportion of men in the urban areas desired more children in addition to those they currently had, and had sex preferences compared to men in the rural areas. Age, level of education, religion, and number of living children were significant predictors of desiring more children among men residing in urban areas, while no significant predictors were found for desiring more children among men in rural areas.

## Competing interest

The authors declare no competing interests

## Authors' contributions

KS and KO conceptualised and designed the study. KS, NA, ADO, ABO and AF collected the data,

analysed and interpreted it. SA and KS contributed to the drafting of the original document. OB, DA, and JI reviewed and edited the document. All authors have read and approved the final manuscript.

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