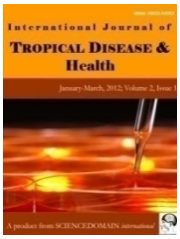

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A Comparative Study of Contraceptive Use among Rural and Urban Women in Osun State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author AWO designed the study, led the team in data collection, took part in statistical analysis, and wrote the first draft of the manuscript. Author AOEO wrote the protocol, took part in data collection and analysis and managed the literature searches. The two authors read and approved the final manuscript.

Research Article

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ABSTRACT

Aims: To compare contraceptive practices among rural and urban women in Osun State, South-western Nigeria.
Study Design: Cross-sectional descriptive study.
Place and Duration of Study: Osun state in southwestern Nigeria. The study was carried out between January and June 2010.
Methodology: One thousand and twenty four women of reproductive age group, including 512 rural and 512 urban women were selected into this study using multistage sampling method. Research instrument used were pre-coded, pre-tested, semi structured interviewer administered questionnaires. Data was analyzed using the SPSS software.
Results: Four hundred and thirteen rural respondents and 475 urban respondents were aware of contraceptives with only 86(16.8%) and 239(46.7%) respectively using a contraceptive method." Seventeen (3.3%) and 95(18.6%) of rural and urban respondents respectively used their contraceptive methods consistently. Thirty eight (7.4%) and

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118(23.1%) of rural and urban respondents respectively used a condom the last time they had sexual intercourse. Mean number of births per woman was 3.4±1.8 births per woman in rural and 2.9±1.5 births per urban woman. Sixty nine (13.5%) of rural and 164(32.0%) of urban respondents had discontinued their contraceptive method at one time or the other. Women with formal education in both locations had about one-half the fertility rate compared to women with no formal education (OR=0.59, 95% CI=0.45–0.95, p=0.001). Similarly, women who used contraceptives in both locations had about one-twelfth fertility rate compared to women not using contraceptives (OR=0.08, 95% CI=0.06–0.12 and p=0.019)."

Conclusion: Awareness and use of contraceptives was higher in urban than rural respondents under study. Fertility was also higher among urban than rural women.

Keywords: Fertility; rural and urban communities; contraception; determinants.

1. INTRODUCTION

The population of a country or a defined area is largely determined by the three variables of deaths (mortality), births (fertility) and migration. The balance between these variables determines whether a population decreases or increases in number. There is widespread concern that rapid population growth may be constraining development in many countries of the world.

Among developing countries surveyed since 1990, total fertility rate was highest in sub-Saharan Africa at an average of 5.3 children per woman and lowest in Asia, Latin America and the Caribbean at 3.5 (UNPF, 2000).

Nigeria is the most populous country in Africa with a rapid population growth that outweighs the growth of resources. Overpopulation may worsen poverty among families and communities thereby contributing to high morbidity and mortality. Therefore, government officials prioritize population control to alleviate poverty, which is prevalent in the country.

With a current population of over 150 million and a growth rate of approximately 2.4 percent per annum, Nigeria is the most populous country in Africa (PRB, 2007). Population levels such as these can cause a reduction in the 'carrying capacity' of the ecosystem, overexploitation, depletion and pressure on natural resources, thus threatening public health. In the event of overpopulation, consequently there will be water and food shortages, deforestation, environmental pollution, damage of coastlines, changing biodiversity and global adverse climatic changes (Hinrichsen and Robey, 2000).

The fertility rate in Nigeria is 5.7 children per woman. Contraceptive prevalence rate was low at 13% (NPC 2006) compared to other countries such as United States of America (Diana, 2005) and Pakistan (Pasha, 2001). From past demographic surveys, we know that urban women were more likely to use a method than rural women (NPC, 2004). Many couples use contraceptives inconsistently and this is in spite of a high awareness of contraception reported in the country (Arowojolu et al., 2002).

Fertility in rural areas is three times higher than that of urban areas, which can be attributed to a variety of social and economic factors (NPC, 2006; Ainsworth, 2010). The persistently

high fertility in Nigeria despite family planning programmes suggests that there are yet undetermined factors associated with contraception that has been rendering previous strategies less effective. This study aims to inform national governments and non-governmental organizations (NGOs), working on family planning programmes; and can inform an approach to family planning that is tailored to rural and urban populations separately.

Examining the various fertility determinants of sub-groups in Nigeria is thus important in this era of significant urbanization while realizing that a significant proportion of the population still lives in the rural areas. The general objective of the study is to describe and compare contraceptive practices as determinants of fertility among women living in rural and urban communities of Osun State in South western Nigeria.

2. MATERIALS AND METHODS

2.1 Study Area

Osun is a state in Southwestern region of Nigeria, with Osogbo town as the state capital. The State has a population of about 3.2 million at the last national census with a rural to urban ratio of 1.4:1 (NPC, 2006). The state has a high unmet need for contraception as in many other parts of Nigeria. In the rural areas, majority of inhabitants are farmers while in the urban settings, they are mostly traders, artisans and civil servants. Good road network, fairly stable electricity and functional and accessible health facilities characterized the urban areas compared to rural. Majority of health facilities in rural areas are health posts and dispensaries while the few primary health care centers lack adequate resources including contraceptives unlike the urban areas. Most nongovernmental organizations working on fertility reduction programmes serve mainly the urban areas.

2.2 Study Design

This is a descriptive cross sectional, comparative study of pattern of contraception as a determinant of fertility among women of reproductive age in rural and urban communities of Osun state in South-western Nigeria.

2.3 Study Population

The **t**arget populations were women of reproductive age 15 to 49 years in Osun state. Eligible women would have been living in the rural or urban area for at least five years. Women who responded to the research instruments constitute the study population.

2.4 Sample Size Estimation

Using the sample size calculation formula for the comparison of two rates (Olawuyi, 1996) and a prevalence rates of 0.61 for rural and 0.48 for urban fertility level (births per woman) according to National Demographic and Health Survey (NPC, 2006), the calculated sample size was 512 for each of rural and urban respondents. Total sample size was 1024.

2.5 Sampling Method

A multi-stage sampling method was adopted in sample selection. In stage I, five (16.6%) of the thirty Local Governments areas in the state were selected by simple random sampling,

employing simple balloting. A list of communities designated as rural and urban per local government was obtained from the Osun state Ministry of local government and chieftaincy affairs. In stage II, one rural and one urban community were selected per local government using simple random sampling (simple balloting). This evolved a total of five rural and five urban communities recruited for the study. By equal allocation techniques, 105 questionnaires were allocated to each community.

In stage III, a sampling frame of all enumeration areas in each community was drawn. The enumeration areas used were allocated by the National Population Commission for the 2006 National population census. One enumeration area (EA) was selected per community using simple random sampling (simple balloting). In stage IV, a sample frame or list of all streets in an enumeration area was prepared and two streets were chosen per enumeration area by simple random sampling employing simple balloting. On a street, the existing primary health care household numbering was utilized to select houses. Every house with the last number being an even number was selected (for rural communities) and odd numbers for urban communities.

2.6 Data Collection

All eligible women met in the sampled houses were interviewed with pre coded, pre tested interviewer administered questionnaires conducted by trained research assistants who could also speak local language. A vernacular version of the questionnaire was prepared for the uneducated respondents to reduce inter-observer variation in interpretation during the interview. Five visits to each of the rural and urban setting were made. Whenever a house was found to be empty, such houses were omitted and the next house to it was selected to replace it.

2.7 Study Variables

Information on socioeconomic characteristics of the respondents, their fertility pattern and preferences were obtained. Information collected on pattern of contraception includes knowledge, attitude and practice of contraception and factors associated with non use of contraceptive methods. Consistent condom use meant that the respondent used condoms regularly or almost all the time.

2.8 Ethical Consideration and Limitation

Ethical approval to conduct this study was obtained from the research ethics committee of LAUTECH teaching hospital Osogbo. Approvals were also obtained from the Local government Departments of health and community development and heads of selected communities. Inform consent was obtained from each woman who participated in the study. One limitation of this study is possible response bias on the part of some respondents as a result of some cultural beliefs (which is more prevalent in rural areas) that counting of number of children a woman has for her husband is improper. This was appropriately handled by persuasive training and sensitivity of the research assistants.

2.9 Data Management

The SPSS Version 12.0 statistical package was used for data entry and analysis. Validity of data collected was ensured by double entry and random checks for errors. Relevant

frequency distributions and summary measures were done. The Chi-square test was used to demonstrate relationships between categorical variables, and two independent sample T test analysis was used to compare mean differences between quantitative variables. A binary logistics regression analysis for fertility level (based on desire to have more children) and some selected variables was done. Level of significance was set at P-values ≤0.05 for all inferential analysis.

3. RESULTS

Table 1 shows that the highest proportion of respondents was found in the 25-34 year age group in both areas.One hundred and ten (21.5%) of rural respondents had no formal education, compared with 38(7.4%) of urban respondents.

Table 1. Socio-demographic data of respondents by location

Variables	Rural n (%)	Urban n (%)
Age in years		
15-24	107 (20.9)	105 (20.5)
25-34	206 (40.2)	203 (39.6)
35-44	156(30.5)	182 (35.6)
45 >-	43 (8.4)	22 (4.3)
Education level		
No formal	110 (21.5)	38 (7.4)
Primary	166 (32.4)	81 (15.8)
Junior Secondary	67 (13.1)	62 (12.1)
Senior Secondary	135 (26.4)	175 (34.2)
Post Secondary	29 (5.7)	135 (26.4)
Others e.g. Koranic	5 (1.0)	21 (4.1)
Occupational group		
Professionals e.g. Doctors	8 (1.6)	81 (15.8)
Skilled e.g. Teachers	332 (64.8)	279 (54.5)
Semi skilled e.g. Artisans	85 (16.6)	107 (20.9)
Unskilled e.g. Petty traders	54 (10.5)	4 (0.8)
Unemployed e.g. Housewife	33 (6.5)	41 (8.0)
Religion		
Catholic	21 (4.1)	26 (5.1)
Protestant	234 (45.8)	159 (31.1)
Islam	248 (48.5)	219 (42.8)
Traditional	3 (0.6)	7 (1.4)
Others	6 91.0)	101 (18.7)
Marital status	12 (2.3)	
Single	467 (91.2)	63 (12.3)
Married	10 (2.0)	414 (80.9)
Divorced	13 (2.5)	11 (2.1)
Widowed	10 (2.0)	16 (3.1)
Separated	0 (0.0)	7 91.4)
Others		1 (0.2)

The distribution of respondent by religion shows that the Muslims formed the highest proportion (48.5% in rural and 42.8% in urban settings) while Catholics constitutes 21(4.1%) of rural respondents compared with 26(5.1%) in urban. Four hundred and sixty seven (91.2%) of respondents in the rural settings were married compared with 414(80.9%) of urban respondents.

Table 2 shows that the highest proportion of respondents had first sexual contact within the age group 15-19 years and 20-24 years in rural and urban communities respectively. Mean age at first sexual intercourse was 18.0 $\pm$3.9 years for rural and 19.5$\pm$5.0 years for urban.

Table 2. Sexual and Contraception Knowledge, Attitudes and Behaviors among respondents by location

Variables	Rural n (%)	Urban n (%)
Age at first sexual intercourse	**(N=432)**	**(N=465)**
Less than 15	50 (11.5)	31 (6.7)
15-19	215(56.1)	175 (40.3)
20-24	146 (36.1)	185 (42.6)
25-29	18 (5.0)	70 (16.1)
30-34	2 (0.5)	4 9 (0.9)
Awareness and use of contraception	**(N=512)**	**(N=512)**
Aware of unsafe/or ovulation period	228(44.5)	340 (66.4)
Correctly described it	86 (16.8)	192 (37.5)
Aware of contraception	413 (80.7)	475 (92.8)
Ever used contraception	86 (16.8)	239 (46.7)
Using a method now	46 (9.0)	198 (38.7)
Use chosen method consistently	17 (3.3)	95 (18.6)
Used condom at last sexual contact	38 (7.4)	118 (23.1)
Discontinued a method before	69 (13.5)	164 (32.0)
Reasons for discontinued use	**(N=69)**	**(N=164)**
Fear of side effect	19 (27.5)	44 (26.8)
Inconvenient	21 (30.5)	48 (29.3)
Ineffectiveness of methods	10 (14.5)	28 (17.1)
Costly/Inaccessible	10 (14.5)	29 (17.7)
Others	9 (13.0)	15 (9.1)
Reasons for never used a method	**(N=426)**	**(N=273)**
Fear of side effect	67 (15.7)	99 (36.3)
Cultural	86 (20.2)	32 (11.7)
Religion	114 (26.8)	45 (16.5)
Ineffective/Ignorance of method	89 (20.9)	50 (18.3)
Costly/Inaccessible	35 (8.2)	30 (11.0)
Others	35 (8.2)	17 (6.2)
Number of children ever born	**(N=512)**	**(N=512)**
0(Nulliparous)	11 (2.1)	24 (4.6)
1(Monoparous)	75 (14.6)	87 (17.0)
2-4(Multiparous)	289 (56.4)	322 (62.9)
5 and above(grand-multiparous)	137 (26.8)	79 (15.5)
Desire for more children	**(N=490)**	**(N=489)**
No	202 (41.2)	232 (47.4)
Yes	288 (58.8)	257 (52.6)

Two hundred and twenty eight (44.5%) of rural respondents were aware of the ovulation period compared to 340 (66.4%) of urban respondent. In urban, 192 (37.5%) could correctly described ovulation period compared with 86 (16.8%) in rural.

Four hundred and thirteen (80.7%) of rural respondents were aware of contraceptives with only 86 (16.8%) using a method. Among urban respondents, 475 (92.8%) were aware of contraceptives while only 239 (46.7%) were using a method. About 69 (13.5%) of rural respondents had discontinued their contraceptive method at one time or the other, as compared to 164 (32.0%) of urban respondents. Seventeen (3.3%) and 95 (18.6%) of rural and urban respondents respectively used their contraceptive methods consistently. Thirty-eight (7.4%) and 118 (23.1%) of urban and rural respondents respectively used a condom the last time they had sexual intercourse. More respondents in both communities favoured multi parity, having had 2-4 children and these include 289 (56.4%) of rural and 322 (62.9%) of urban respondents. This was followed by grand multi parity and then mono parity. Mean number of births per woman (index of total fertility rate) was 3.4±1.8 births per woman in rural, and 2.9±1.5 births per urban woman. Two hundred and eighty eight (58.8%) of rural respondents desired more children compared to 257 (52.6%) of urban respondents.

Table 3 shows that condoms followed by injectables and IUCD were the commonly known methods of contraceptives among both urban and rural respondents. Also condoms 33 (28.7%) and injectables 36 (31.3%) had the highest proportion of use among rural respondents. In urban communities, 141 (52.4%) used condoms while 106 (20.7%) used injectables. Common reasons given by women in both areas for discontinuity of contraceptive methods include the fear of side effect, inconvenience, high cost, ineffectiveness and ignorance of method.

Table 3. Knowledge and usage of contraceptive methods among respondents by location

	Knowledge of contraception (%)		**Usage of contraception (%)**	
	Rural	Urban	Rural	Urban
N	371	464	115	269
Condom	61.2	70.7	28.7	52.4
IUCD	19.1	15.1	18.3	25.3
Injectable	10.2	2.6	31.3	39.4
OCP	7.3	8.2	12.2	7.8
Spermicidal	0	1.1	-	-
Traditional	1.9	1.1	8.7	3.0
Others	0.3	1.3	0.9	5.6

Table 4 shows that there was a statistically significant association between desire to have more children (among both rural and urban respondents) and use of contraceptives as well as between desire to have more children and (nil formal) level of education (p=0.001). The mean age at first sexual intercourse was higher in urban (19.5 years) than in rural (18.0 years), and this was statistically significant (t =5.108, p=0.001). Also, the mean number of children ever had was higher in rural (3.4) than in urban (2.9), and this mean was statistically significant (t=4.873 and p =0.010).

Table 4. Association between selected fertility determinants and use of contraception by location

Used contraceptives	Desire for more children (rural and urban), N (%)		P
	Rural	Urban	
No	217 (82.5)	267 (56.3)	0.001[a]
Yes	46 (17.5)	207 (43.7)	
Level of education			
No formal	47 (16.3)	18 (7.0)	0.001[a]
Formal	241 (83.7)	249 (93.0)	
	Differences between locations (rural and urban), mean (sd)		P
Age at first sexual intercourse	18.0 (3.9)	19.5 (5.0)	0.001[b]
Mean No of children ever had/born	3.4 (1.8)	2.9 (1.5)	0.010[b]
	Logistic regression model, OR and 95%CI for fertility		P
Level of education (ref=no formal)	0.59	0.45-0.95	0.001
Used contraceptives (ref=no)	0.08	0.06-0.12	0.019

[a] Chi-square test ; [b] T-test

A binary logistics regression analysis showed that women with formal education in both locations had about a half (OR=0.59, 95% C.I=0.45-0.95 and p=0.001) fold fertility level compared to women with no formal education. Similarly women who used contraceptives in both locations have about one-twelfth (OR=0.08, 95% C.I=0.06-0.12 and p=0.019) fold chance of a fertility compared to a woman not using contraceptives.

4. DISCUSSION

In this study, most respondents had their first sexual experience between 15 and 24 years, with the mean age at first sexual intercourse about two years higher in urban compared with rural women. When compared to the NDHS (NPC, 2000) in which age at first sexual intercourse among studied women was found to be 18 years among half of respondents, and before 15 years in a quarter of them, it could be deduced that age at first sexual intercourse is generally higher in this study. This could be a result of increases in youth's exposure to health education. In addition, the scourge of HIV/AIDs has greatly contributed to the increasing fear of indiscriminate sexual intercourse and age at initiation of sexual intercourse.

The earlier onset of sexual exposure in the rural areas could be due to the fact that majority of schools that may be teaching sexuality education were located in urban areas. This implies that girls and young women in rural areas might not be conversant with sexuality information early enough as a result of poor accessibility to family life education, and poor access to media advertisements against STIs and HIV most of which takes place in the urban areas. The implication of this is that early sexual exposure may lead to further exposures, early pregnancy and subsequent or early fertility.

In this study, there was a high level of awareness of contraception among the majority for both rural and urban respondents, but less than one fifth of rural and less than half of urban respondents were contraceptive users. This agreed with other studies, (Arowojolu, 2000;

Rutstein, 2005; Conde-Agudelo and Balizan, 2000; Gillespie, 2004), in which awareness of contraception was high among majority of respondents, but only a minority used a method.

In this study, fertility was higher among rural women than urban women. This trend is supported by data from the National Demographic and Health Sirvey (NPC, 2000) and by data from other developing countries. The data shows that rates of contraceptive use and the popularity of methods were also different between the rural and urban areas which may offer some explanation.

In this study, respondents from rural areas reported significantly less contraceptive use than their urban counterparts. The rural-urban disparity could be explained by the fact that contraceptive services were not readily available in rural health centers apart from the fact that comprehensive health centers were less common in rural areas, as most of their health facilities were mere health centers, health posts and dispensaries with inadequate resources to provide services.

The respondents in this study reported using various contraceptive methods. Injectables were the most used method among rural respondents while condoms were the most used method among urban respondents. In urban areas, condoms are accessible, affordable and easy to apply or use and its side effects are minimal. Urban residents are more likely to have unhindered access to adequate information on contraception such as the ability of condoms to give dual protection (prevention of unwanted pregnancies and sexually transmitted infections). In rural areas, lower accessibility to health care facilities could prompt the residents into taking relatively long acting contraceptive method such as the injectable.

As seen in this study, better educated women were found to have lower fertility. This has been supported by the national demographic and health survey (NPC, 2009). Better-educated women have broader knowledge, higher socioeconomic status and less fatalistic attitudes towards reproduction than do less educated women. The disparity in number of women with formal education between rural and urban settings could be due to the fact that educational resources and facilities were more located in the cities.

There is a need for governments to strengthen health systems in rural areas to meet up with the level in the urban. Through this, readily accessible contraceptive counseling and services would bring about better awareness, positive behavioural change towards consistent use of contraception and subsequent reduction in fertility levels. In addition, nongovernmental organizations working in the area of reproductive health should spread their tentacles to the rural areas instead of concentrating only on the urban areas.

5. CONCLUSION

Fertility was higher in rural compared to urban areas studied. Though awareness of contraceptive methods was high in both settings, use of contraceptive methods was higher among urban than rural respondents. This evidence can be used to advocate for more comprehensive fertility control interventions in rural areas through improved accessibility to contraceptives counseling and services.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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