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■ Original Research Article

Fertility Indicators and Prevalence of Infertility in Benue State South Senatorial District

Silas Ochejele[1], Ediga B. Agbo[2], Yemisi Anebi [3], Bawa Inalegwu [4], Irowa Omoregie[1], Paul Ogwuche[1]

1. Department of Obstetrics and Gynaecology, College of Medicine, Federal University of Health Sciences, Otukpo (FUHSO), P.M.B 145, Otukpo, Benue State, Nigeria. Email: silasfriday@yahoo.com
2. Department of Microbiology, Faculty of Science, Federal University of Health Sciences, Otukpo (FUHSO), P.M.B 145, Otukpo, Benue State, Nigeria. Email: ediga_agbo@yahoo.com,
3. Department of Paediatrics, College of Medicine, Federal University of Health Sciences, Otukpo (FUHSO), P.M.B 145, Otukpo, Benue State, Nigeria.
4. Department of Biochemistry, College of Medicine, Federal University of Health Sciences, Otukpo (FUHSO), P.M.B 145, Otukpo, Benue State, Nigeria

ABSTRACT

Background: Sub-Saharan Africa, unlike the rest of the world is yet to achieve demographic fertility transition. In Nigeria, Benue state and Benue South senatorial particular, there is a paucity of vital statistics, and hospital-based studies constitute the main source of information. Therefore, the aim of this study was to determine the indicators of fertility and the prevalence of infertility in Benue State South Senatorial District. **Aim:** To determine fertility indicators and prevalence of infertility in Benue South Senatorial District. **Materials and methods:** This was a community-based, descriptive cross-sectional study involving women of childbearing age. Multi-stage sampling technique was used to select eligible women from communities in Benue South Senatorial District.Ethical clearance was obtained from theEthical Committee of the Federal University of Health Sciences, Otukpo before commencement of the study and informed consent was obtained from the study participants. A pre-designed, pre-tested Proforma was used for data collection in the selected communities. Data obtained was analysed using SPSS version 20 **Results:** The mean age at first pregnancy of the 226 women studied was 24 years and their average parity was 4. Level of education, body mass index (BMI), age at first pregnancy and tribe were the significant predictors of fertility in this study. Prevalence of infertility was 4%. **Conclusion**: Benue South Senatorial District's fertility indicators is similar to the national indicators and is on course with her demographic transition.

Correspondence:
Silas Ochejele

Keywords: Predictors, fertility, prevalence, infertility, Benue South

INTRODUCTION

Globally, many countries have achieved their demographic transitions except Sub Saharan Africa.[1,2]The population of the continent is expected to grow from 1 billion in 2015 to more than 2 billion and nearly 4 billion in 2100.[1,3] According to the 2018 Nigeria Demographic and Health Survey, the national total fertility rate is 5.3 children/woman and that of Benue State is 4.8 children/woman.[4]Nigeria and Benue State have total fertility rates of 5.5 and 5.2 respectively in 2013.[5] In Nigeria, ethnicity, religion, place of residence, level of education and socioeconomic status were the major determinants of fertility[6-8]Infertility is defined as the inability to achieve conception after a year of regular unprotected sexual intercourse.[9,10] Women bear the brunt of the psychological and emotional trauma of an infertile union.[11]Infertility occurs in approximately 48.5 million couples globally and 1 in 7 couples in the United Kingdom.[12] However, infertility is the most common presentation among the gynaecological outpatients with a prevalence range of 14.8% to 38.8%.[13-15]

To make a statement of the problem and clearly explain the need for this study.

Aim and Objectives: The main aim of the research is to determine fertility indicators and prevalence of infertility in Benue South Senatorial District. The specific objectives are:

1. To determine the predictors of fertility.
2. To determine the prevalence of infertility.
3. To determine the duration of infertility.
4. To determine the types of infertility.
5. To determine the causes of infertility in infertile couples.

MATERIALS AND METHODS

Benue State is located within the North Central Geo-political zone of Nigeria with a land mass of 34,059 square kilometers and population of 6,141,300 (projected population from 2006 National census).[16,17] It has geographic coordinates of Latitude 7° 19′ 60.00″N and Longitude 8°44′59.99″E.[18] The State is comprised of three Senatorial Districts which are Benue South, Benue North-West and Benue North-South Senatorial Districts.[19] Benue South Senatorial district is made up of nine (9) Local Government Areas (LGAs) which are Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu, and Otukpo LGAs.[19] There are a total of nine (9) General hospitals and two mission hospitals in Benue South Senatorial District with one General Hospital in each LGA. However, none of the General hospitals nor the mission hospitals run specialist clinic. The study was a community-based descriptive, cross-sectional study. The study population was made up of women of childbearing age (15-49 years) within the Benue South Senatorial District. Since there was no specialist clinic in any of the General Hospitals, participants for the proposed infertility study could not be drawn. Inclusion criteria were women aged 15-49 years in Benue South Senatorial District who gave consent. The exclusion criteria were unmarried women within the selected age bracket.

Sample Size Calculation

The sample size was calculated using the formula for cross-section study when the parameters are in proportions.[11]

$N= Z_{n/}^2 \times PQ/ E^2$.

Where N= Sample size

$Z_{n/}^2$ = normal deviation for two-tailed alternative hypothesis at 5 % level of significance which is 1.96.

P= Prevalence or proportion (Prevalence of infertility of 15.7% from previous study in Sokoto, Northwest Nigeria.[13]

E= Precision or the Margin of error, which is taken as 0.05 (5%).

$N= (1.96)^2 \times 15.7 \times 84.7 /(0.05)^2 = 205$.

Using a non-response rate of 10%, the total sample size N= 226 women.

Sampling Technique

A multistage sampling technique was used in this study. A simple random sampling technique was used to select five out of the nine LGAs in Benue South Senatorial District. The LGAs selected were Agatu, Otukpo, Ogbadibo, Ohimini and Oju LGAs. Again, simple random sampling technique was used to select two communities from each of the selected LGAs, making a total of ten communities across the 5 LGAs. A convenient sampling technique was used to recruit Twenty-three participants from each community. Out of the 230 questionnaires, 226 returned completely filled and were entered for data analysis.

Ethical Clearance and Consent

An informed consent was obtained from each of the study participants and ethical clearance was obtained from the Ethical Committee of the Federal University of Health Sciences, Otukpo.

Data Collection

A pre-designed, pre-tested Proforma was used to collect information regarding fertility profile of the sampled women in the selected communities. Information collected included sociodemographic data, number of children ever born alive, last childbirth, duration of relationship, age at menarche, as well as weight and height.

Data Analysis

Data was analyzed with the Statistical Package for Social Sciences (SPSS) software version 20.0. Frequencies and percentages were calculated. P-value less than 0.05 was considered significant. Variables with p-value less than 0.05 in binary logistic regression analysis were subjected to multivariable logistic regression analysis to control for confounders. Odds ratio with 95% confidence interval was used to examine associations between sociodemographic factors and fertility. Results were presented with tables.

RESULTS

The sociodemographic profile of the respondents is as shown in Table I. Of the 226 respondents, 65.0% were Idomas, and 11.5% were Igede. Ninety-six (42.48%) of the respondents had secondary education, and those without formal education were the least, accounting for 7.08% of the respondents. The predominant occupation of the respondents was farming, with a frequency of 91 (40.27%) and the teachers were the least with frequency

of 8 (3.54%). Half of the respondents had normal weight as determined by Body Mass Index (BMI) and 4% were obese.

Table I: Sociodemographic profile of the respondents (N=226)

Variables	Frequency(n)	Percentage (%)
Tribe		
Idoma	147	65.0
Igede	26	11.50
Igala	12	5.31
Tiv	3	1.33
Igbo	9	3.98
Yoruba/Hausa	18	7.96
Marital Status		
Married	198	87.61
Divorced/Separated	15	6.64
Widow	13	5.75
Body Mass Index (BMI)		
Underwieght	37	16.37
Normal weight	112	49.56
Over weight	68	30.08
Obese	9	3.98
Level of Education		
No formal education	16	7.08
Primary Education	75	33.19
Secondary Education	96	42.48
Tertiary Education	39	17.25
Occupation		
No response	4	1.77
Trader/Business	63	27.88
Farmer	91	40.27
Teacher	8	3.54
Civil Servant	21	9.29
Paramilitary/Military	9	3.98
Others	30	13.27

Table 2 shows the age distribution of the respondents. Women aged 30-34 years were the highest, accounting for 38.05% of the respondents while those 50 years and above were the least (1.33%).

Table 2: Age distribution of the respondents (N=226)

Age group	Frequency (n)	Percentage (%)
15-19	13	5.75
20-24	31	13.73
25-29	47	20.79
30-34	86	38.05
35-39	29	12.83
40-44	9	3.98
45-49	8	3.54
≥50	3	1.33

Fertility Indicators

Table 3. Mean fertility indicators of the respondents

Variables	Mean
Duration of marriage (years)	15
Age at first pregnancy (years)	24
The number of children ever born alive	4
Total number of sons ever born alive	2
Total number of sons living during study	1
Total number of sons born alive who died before study	1
Total number of daughters ever born alive	2
Total number of daughters living during study	1
Total number of daughters born alive who have died before study	1
Last child birth (years)	2

Measures of Fertility

The total number of live births among the 226 respondents was 790 giving an average parity of 4. Out of the 226 women studied, 9 were infertile giving a prevalence of infertility rate of 4%. The average age at first birth was 24 years. All the infertile cases were primary infertility.

Table 4: Measures of fertility

Age groups (in years)	Average parity/ children ever born
15-19	1
20-24	2
25-29	3
30-34	4
35-39	5
40-44	6
45-49	5
≥ 50	6

Table 5: Fertility History of the Respondents

Variables	Mean
Duration of marriage (years)	15
Age at first pregnancy (years)	24
The number of children ever born alive	4
Total number of sons ever born alive	2
Total number of sons living during study	1
Total number of sons born alive who died before study	1
Total number of daughters ever born alive	2
Total number of daughters living during study	1
Total number of daughters born alive who have died before study	1
Last child birth (years)	2

Table 6 shows univariate logistic regression for demographic factors against fertility. Level of education, occupation, body mass index (BMI), age at first delivery, partner's age and tribe of the respondents were found to influence fertility.

Table 6: Regression Analysis on Sociodemographic Factors the Predictors of Fertility

Variables	OR	95% CI OR Min	Max	P-value
Level of education				
No formal education	Reference			
Primary education	0.67	0.49	0.90	0.047*
Secondary education	1.96	1.34	2.48	0.004|*
Tertiary education	1.63	1.29	1.92	0.535
Occupation				
Trade/Business	Reference			
Farmer	1.59	1.36	1.82	0.03*
Teacher	0.16	0.09	0.39	0.02*
Civil Servant	0.79	0.31	1.30	0.57
Paramilitary/Military	0.93	0.45	1.41	0.84
Others	1.07	0.78	1.36	0.93
BMI				
Normal weight	Reference			
Under weight	0.168	0.10	0.87	0.002*
Overweight	0.193	0.13	1.24	0.023*
Obese	0.231	0.19	0.36	0.001*
Age at first delivery (in years)				
15-19	Reference			
20-24	2.29	1.69	2.60	0.004*
25-29	1.65	1.30	2.05	0.020*
30-34	0.76	1.32	2.16	0.001*
35-39	0.98	0.58	1.39	0.047*
40-44	1.42	0.99	1.83	0.071
□	0.67	0.36	1.01	0.720
Partner's age (in years)				
15-25	Reference			
26-36	0.43	0.29	0.72	0.575
37-47	0.59	0.31	0.85	0.001*
□	0.65	0.40	0.96	0.14
Tribe				
Idoma	Reference			
Igede	0.38	0.22	0.49	0.067
Igala	1.35	1.14	1.40	0.002*
Tiv	1.96	1.45	2.38	0.004*
Igbo	0.99	0.58	1.22	0.40
Yoruba	0.42	0.31	0.53	0.001*
Hausa	1.16	0.34	1.86	0.0000*

*P<0.05

Table 7: Multivariate Logistic Regression analysis on sociodemographic factors of the predictors of fertility that were significant.

Variables (Reference group)	OR	95% CI OR Min	Max	p-Value
Level of Education (No formal education)				
Primary education	0.83	0.42	1.24	0.028*
Secondary education	1.54	0.29	2.74	0.002*
Tertiary education	1.38	0.99	1.66	0.670
BMI (Normal Weight)				
Underweight	0.214	0.19	0.32	0.004*
Overweight	0.133	0.10	0.56	0.026*
Obese	0.241	0.17	0.34	0.001*
Age at first delivery in years (15-19)				
20-24	3.12	1.98	4.30	0.0000*
25-29	1.49	0.74	2.25	0.004*
30-34	1.87	1.04	2.56	0.024*
35-39	0.32	0.18	0.46	0.064
40-44	0.96	0.50	1.31	0.467
□45	0.48	0.34	0.68	0.230
Tribe				
Igede	1.38	0.80	1.75	0.05*
Igala	1.59	1.01	2.20	0.002*
Tiv	2.99	1.50	4.48	0.008*
Igbo	1.96	1.45	2.50	0.100
Yoruba	2.44	1.16	3.69	0.000*
Hausa	3.24	1.81	4.69	0.002*

DISCUSSION

The average parity of the respondents in this study was 4, which is less than the National and Benue State fertility rates of 5.3 and 4.8 children per woman respectively according to the 2018 National and Demographic Health Survey.[4] This shows that Benue South Senatorial District is making good progress in Her demographic transition. The Prevalence of primary infertility in this study was 4%. This is lower than the value obtained in the 15.7% by Panti et al[13] in Sokoto, and the 22.5% reported by Sule et al[22] in Osun State. The disparity observed may be because while our study was community-based, the others were hospital-based.

Level of education was a positive predictor of fertility in this study. Women with secondary education had the highest odds for high fertility when compared to women without formal education. They were closely followed by women with tertiary education. This is in contrast with the studies by Mahanta A[23] in India and Akpa et al[24] in Nigeria where fertility was found to decrease with increasing education. No study with similar findings to what was obtained in this study was found. The finding in this study may be because women with higher education were more financially secure to cater for their young ones compared to women without formal education.

Weight was another predictor of fertility in this study. Women with abnormal weight (underweight, overweight and obese) were all likely to be less fertile compared to women with normal weight. The reduced prospects of fertility with abnormal BMI as seen in this study could be because BMI at either side of normal have been linked with an increased risk of infertility.[25] Disease like Polycystic Ovary Syndrome is associated with infertility and obesity.

The average age at first birth from this study was 24 years. This is higher than the finding in the 2018 National and Demographic Health Survey in which the median age at first delivery was 20.4 years.[4] This finding could be as a result of this age bracket being the period of highest fertility in women.[25] There was a general decline in the odds of fertility as the age at first delivery increased. This observation is likely to be due to decline in chances of conceiving with advancing age in women.

Hausa women had the greatest odds of high fertility in this study when compared to Idoma women. This is in keeping with the findings by Adebowale A S.[27] there was no contrasting findings seen our literature search. This finding may be because Hausa women are more likely to be less educated and to marry earlier compared to women from other parts of Nigeria.[27]

CONCLUSION??

A major concern here is the absence of a conclusion from the data presented in this study.

Conflict of Interest: There is no conflict of interest.

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