



Spatial Patterns and Socio-Demographic Determinants of Fertility Levels Among Women In Nigeria

¹AGBONA, A.A., ²AKINTUNDE, M.O., ¹OLAWALE, A.O. ²ADESIYAN, A. A., ²RASHEED S.L. ¹ADEWOLE, G.O. AND ¹OJO, T. O.

Abstract

Nigeria is regarded as the most populous black race in the whole of Africa this is due to an unchecked birth rate. There is no gainsaying in the fact that fertility is certainly the major elements considered to be important in the population dynamics that has contributed mostly towards population size and structure in the whole globe. The central objective contains in this paper is to determine demographic, socio-economic and cultural factors that explain fertility differential among women of different status in Nigeria. The data for the study was collected through the use of questionnaires from women of reproductive age and women who have ever born one or more children in their lifetime. To do this, Chi-square test and cross-tabulation was used to analyze the effect and significance of some socio-demographic variables (such as occupational status, marital status, age at first birth, religion etc.). The software used for the analysis of the data was Statistical package for social scientists (SPSS). Results from the analysis reveals that educational attainment have no significant effect on the respondents' knowledge about family planning, so also it can be seen that the percentage of women who had no fertility contraction due to the child spacing method adopted is higher as compared to those that had. Higher level of education of the mother, Christianity usage of family planning and skilled occupation accounted for the lower fertility in Nigeria whereas Muslim contributed largely to the high fertility. Furthermore, analysis based on chi-square test showed that occupational status has a significant effect on child spacing.

Keywords: fertility level, population dynamics, demographic, socio-economic, cultural factors

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I. INTRODUCTION

It is established that both direct and indirect causes affect fertility measures in every country, whether it is developed, developing, or undeveloped. When socioeconomic and cultural factors—such as education, living in a rural or urban area, religion, health, and social security—are involved, it is direct. The dreadful problem of high population density in Nigeria continues to have an impact on the people's extremely limited resources (Ushie, 2009). The measure of the level of living will undoubtedly fail if the current fertility is not curbed, and unless this is done, its achievement will remain a mirage. If the current trends are not reversed, it will be difficult for Nigeria in particular and all of Africa to feed itself. (1989, World Bank). Despite increasing caution, Nigeria's fertility rate is rising, and because of better access to medical facilities and dietary intake, the country's mortality rate has significantly declined. Nigeria's fertility rate is still high as of this writing, with an average of about six children per woman.

II. LITERATURE REVIEW

Highlights from Mary et al.'s studies from 2019 showed that fertility measurements are difficult for many different groups of people, including households, women, and society as a whole. As a result, these measures should be taken into account when formulating policies to improve women's economic status. Abolition of early marriage should be promoted through the development of policies, the report recommends. Due to the fact that high fertility results in quality being traded for quantity, it is extremely difficult for a country to prosper economically (Ushie, 2009; Ushie et al., 2011). Numerous studies in Nigeria have connected high fertility to elements like early marriage (Gayawan & Adebayo, 2014; Mberu & Reed, 2014); early childbearing (Gayawan & Adebayo, 2013; Olatoregun et al., 2014); social values ingrained in large family size and preference for boy children (Jegade & Fayemiwo, 2014; Milazzo, 2014; Mil), as well as early child. High fertility has

negative effects on the economy, such as a high unemployment rate, few or limited job prospects, fewer educational opportunities, and a high rate of poverty, with the majority of the population living below the poverty line (Ezehet.al., 2012; Hogan et al., 2010; Mishra & Smyth, 2010; Ogun, 2010). With the recently formed Sustainable Development Goals by 2030, global leaders and politicians acknowledged the significance of education and its importance for girl children as a very important tool for improving them (Bloom et al., 2009; Costanza, Fioramonti, & Kubiszewski, 2016). According to certain research, women with diverse educational backgrounds' reproductive levels vary dramatically (Ainsworth, Beegle, & Nyamete, 1996). Declining fertility rates were caused by women's significant educational achievement at all levels (National Population Commission & ICF Macro International, 2014; Ushie et al., 2011). The status of a woman's employment is yet another crucial aspect that affects her propensity to become pregnant. Bloom et al. (2009); Bick (2015); Kalwij (2000)). Additionally, a woman's employment status and the type of work she conducts have an impact on her ability to conceive (Bernhardt, 1993; Bratti, 2003; Kalwij, 2000). From 56.1% in 2003 to 61.8% in 2013, Nigeria has seen an increase in the proportion of women in the labor force (National Population Commission & ICF Macro International, 2014). When women are working, fertility is typically lower, and if the opposite is true, it is higher (Kreyenfeld & Andersson, 2014). Manning, Trella, Lyons, and Du Toit (2010) expressed the opinion that the high number of males looking for work has decreased their likelihood of getting married, which has a negative impact on the fertility of the affected young men and the population as a whole.

III. METHODOLOGY

3.1 CHI SQUARE TEST

Chi-square test denoted by χ^2 is a non-parametric statistical test which is usually applied in a test that involve a normal measurement that can only be classified into categories. Chi-square statistic is used to test the independent of two traits and the data used in chi-square are usually distributed free. It be used to investigate

whether distribution of categorical variable differs from one another. It is denoted by $\chi^2 = \sum_{i=1}^n \left(\frac{o-e}{e} \right)^2$

Where O= Observed Value and E= Expected Value

Expected Value = $\frac{\text{row total} \times \text{column total}}{\text{overall total}}$

Degree of freedom $(r - 1)(c - 1)$

Note that the Pearson chi-square probability of accepting null hypothesis (i.e. p-value) is valid for chi-square test of independence if and only if the expected count that is less than 5 is at most 20%, otherwise, the decision is being made based on likelihood ratio probability of accepting null hypothesis.

3.2 LEVENE TEST OF EQUALITY OF VARIANCES

THE Levene test is defined as follows: -

$$H_o : \sigma_1^2 = \sigma_2^2 = \dots = \sigma_k^2$$

$$H_i : \sigma_1^2 \neq \sigma_2^2 \quad \text{for at least one pair } (i \neq j)$$

The Levene test is statistic is defined as

$$W = \frac{(N - k) \sum_{i=1}^k N_i (\bar{Z}_{i..} - \bar{Z}_{..})^2}{(k - 1) \sum_{i=1}^k \sum_{j=1}^N N_{ij} (Z_{ij.} - \bar{Z}_{i.})^2}$$

Where $Z_{ij.}$ could have any of the following definitions

- a. $Z_{ij.} = |Y_{ij} - \bar{Y}_{i.}|$ where $\bar{Y}_{i.}$ is the mean of the i -th sub-group
- b. a. $Z_{ij.} = |Y_{ij} - \bar{Y}_{i.}|$ where $\bar{Y}_{i.}$ is the median of the i -th sub-group
- c. $Z_{ij.} = |Y_{ij} - \bar{Y}'_{i.}|$ where $\bar{Y}'_{i.}$ is the 10% trimmed mean of the i -th sub-group

IV. DATA ANALYSIS AND PRESENTATION

Questionnaire was the instruments used for the data collection, in all 120 questionnaire was rolled out for the people of Agbale, in Ede south local Government of Osun State out of which 117 was returned

accounting for approximately 98 percent. Respondents cover women of both child bearing and reproductive ages. The respondents' socio-demographic variables and child spacing patterns were analysed. Statistical package for social scientist (SPSS) was the software used for the analysis. Various analysis carried out on the data collected are Chi-square and analysis of variance components. Socio-demographics variables analyzed include age at first marriage, level of education, religion, occupation and marital status among others test of homogeneity and Levine's test of equal variance were used to test the assumptions.

ANALYSIS AND INTERPRETATION

Table 1: Age at first birth

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18	1	.9	.9	.9
19	1	.9	.9	1.7
20	1	.9	.9	2.6
21	5	4.3	4.3	6.8
23	2	1.7	1.7	8.5
24	10	8.5	8.5	17.1
25	6	5.1	5.1	22.2
26	19	16.2	16.2	38.5
27	13	11.1	11.1	49.6
28	16	13.7	13.7	63.2
29	9	7.7	7.7	70.9
30	8	6.8	6.8	77.8
31	7	6.0	6.0	83.8
32	6	5.1	5.1	88.9
33	2	1.7	1.7	90.6
34	3	2.6	2.6	93.2
35	3	2.6	2.6	95.7
36	2	1.7	1.7	97.4
37	2	1.7	1.7	99.1
38	1	.9	.9	100.0
Total	117	100.0	100.0	

Source: Field Survey Output 2021

From the table, the age of respondents at their first birth from 18 – 38 years are 1.7%,0.9%,0.9%,0.9%,4.3%,0.9%,7.7%,5.1%,16.2%,11.1%,13.7%,7.7%,6.8%,6.0%,5.1%,1.7%,2.6%,2.6%,1.7%,1.7%,0.9% respectively. Ages 26, 28 and 27 accounted for the largest responses in that other while ages 18, 19 and 20 accounted for the lowest (table 1).

Table 2: Religion of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Christianity	31	26.5	26.5	26.5
Islam	76	65.0	65.0	91.5
Traditional	10	8.5	8.5	100.0
Total	117	100.0	100.0	

Source: Field Survey Output (2021)

The table above shows that the studied area was heavily populated with Muslims and Christian with 65 and 26.5 percentages while traditional adherents accounted for just 8.5%.

Table 3: Occupational status

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Self-employed	43	36.8	36.8	36.8
Civil-servant	7	6.0	6.0	42.8
Unemployed	67	57.3	57.2	100.0

Total	117	100.0	100.0
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Source: Field Survey Output (2021)

The table 3 above shows that the studied population was dominated with unemployed mothers, this actually accounted for 57.2%, followed by self-employed group with 36.8% and civil servants with 6.0%.

Table 4: Mode of child delivery

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Caesarian section	11	9.4	9.4	9.4
Normal delivery	100	85.5	85.5	94.9
Both	6	5.1	5.1	100.0
Total	117	100.0	100.0	

Source: Field Survey Output (2021)

Table 4 above reveals that majority of birth are product of normal delivery and this accounted for 85.5% and those that went through Caesarian section was 9.4% and those that went through both are 5.1%, the implication of this is that as a result of easy delivery this will encourage would be mothers to have as many children as possible which is inimical to the general wellbeing of the society at large.

Table 5: Current family size

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 3-5	85	72.6	72.6	72.6
5-7	21	17.9	17.9	90.6
7-9	11	9.4	9.4	100.0
Total	117	100.0	100.0	

Source: Field Survey Output (2021)

From table 5, it is evident that those that believed in having between 3 and five children accounted for approximately 73% and those that believed in family size of between 5 and 7 which also accounted for 17.9%. It is clear that the studied area respondents believed in having as many children as God's permits.

Table 6: Number of children ever born

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	1	.9	.9	.9
1	6	5.1	5.1	6.0
2	26	22.2	22.2	28.2
3	34	29.1	29.1	57.3
4	28	23.9	23.9	81.2
5	16	13.7	13.7	94.9
6	3	2.6	2.6	97.4
7	2	1.7	1.7	99.1
9	1	.9	.9	100.0
Total	117	100.0	100.0	

Source: Field Survey Output (2021)

From table 6, the following information are feasible that the percentages of respondents who gave birth to a child are 5.1%, those with 2-9 children are 22.2%, 29.1%, 23.9%, 13.7%, 2.6%, 1.7% and 0.9% respectively. It should be noted that those that believed in having between 3 and five children amounted to 78%.

Table 7: Information about the child spacing or family planning

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	7	6.0	6.0	6.0
No	110	94.0	94.0	100.0
Total	117	100.0	100.0	

Source: Field Survey Output (2021)

The reason(s) for having large family size is best justified from the table 7 above where majority of respondents claimed or pretended, they don't have information about child spacing as this accounted for (110)

94.0% of the studied areas population while very few respondents said they have information about child spacing or family (7 (6.0%) respondents).

Table 8: Mother’s educational attainment versus Have you heard about child spacing of family planning before? Crosstabulation Count

		Have you heard about child spacing of family planning before?		Total
		Yes	No	
Mother’s educational attainment	Primary	5	69	74
	Secondary	25	1	26
	Higher/Tertiary	16	1	17
Total		110	7	117

Source: SPSS Output (2021)

From the table 8, it evident that 69 respondents who claimed to have gone through primary education gave a ‘no’ response that they have never heard about child spacing while only five members of this group claimed they heard about it. In the same way 25 respondents with secondary education claimed they didn’t hear anything about family planning or child spacing while only one say yes that information about child spacing is known to them. I6 respondents with tertiary education certificates claimed they have heard about family planning before while only 1 claimed ignorance. The implication of this result is that there will be massive or uncontrolled fertility as a result of low educational attainment.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
What is your current family size?	8.988	2	114	.000
Number of children ever born	2.183	2	114	.117
Number of children that died	.478	2	114	.621

Source: SPSS Output:

The table above shows the Levene’s test of equal variances (homogeneity), from the table it is clear that the variance of current family size is significantly different while those of the children ever born and children that ever died are not significantly different. The implication of this result is that children ever born and children ever died contribution is the same in the studied areas.

ANOVA

		Sum of Squares	d.f	Mean Square	F	Sig.
What is your current family size?	Between Groups	2.258	2	1.129	2.742	.069
	Within Groups	46.938	114	.412		
	Total	49.197	116			
Number of children ever born	Between Groups	.318	2	.159	.079	.925
	Within Groups	230.605	114	2.023		
	Total	230.923	116			
Number of children that died	Between Groups	.052	2	.026	.129	.879
	Within Groups	23.178	114	.203		
	Total	23.231	116			

Source: SPSS Output (2021)

Analysis of variance(ANOVA) table above revealed that the respondents in the studied areas are not significantly for the three variables (family size, number of children ever born and number of children that died) combined are not significantly different, since all the P-values are all greater than 0.05, implying that the contributions of the three variables are not noticeable

Test of Homogeneity of Variances

	Levene’s Statistic	df1	df2	Sig.
Mode of child delivery?	4.582	2	114	.012
What is your current family size?	8.988	2	114	.000
What was the reason for the space in between your children?	2.369	2	114	.098
Any case of miscarriage?	.236	2	114	.790
Any case of abortion?	2.224	2	114	.113

Source: SPSS output (2021)

The table above shows the Levene’s test of equal variances (homogeneity), from the table we conclude that all the variables such as (what was the reason for the space in between your children, any case of miscarriage and any case of abortion) have equal variances except variables (mode of child delivery and “what is your current family size”) which have no equal variances.

		Sum of Squares	df	Mean Square	F	Sig.
Mode of child delivery?	Between Groups	.311	2	.156	1.077	.344
	Within Groups	16.475	114	.145		
	Total	16.786	116			
What is your current family size?	Between Groups	2.258	2	1.129	2.742	.069
	Within Groups	46.938	114	.412		
	Total	49.197	116			
What was the reason for the space in between your children?	Between Groups	20.630	2	10.315	5.662	.005
	Within Groups	207.678	114	1.822		
	Total	228.308	116			
Any case of miscarriage?	Between Groups	2.055	2	1.027	2.072	.131
	Within Groups	56.527	114	.496		
	Total	58.581	116			
Any case of abortion?	Between Groups	.106	2	.053	.564	.570
	Within Groups	10.664	114	.094		
	Total	10.769	116			

Source: SPSS Output (2021)

The above table shows the analysis of variance (ANOVA) table of the respondents, from the table, since the P-values are all greater than 0.05, we can conclude that mode of child delivery, family size, any case of miscarriage, and any case of abortion are not statistically significant to child spacing method among women, except “reason for the space in between your children” that is statistically significant with a P-value of 0.005. the implication of the results is that their contribution to child (ren) are not noticeable.

V. Conclusion And Recommend Ation

It is a known fact that human population is a very important factor in the developmental stage of human existence failure of which could lead to crisis. It remains the yardstick for the measurement of socio -economic and political success of any nation. However, if population is growing unchecked that is if the available resource cannot provide for the population, then it becomes a source of worry to the society where this happens. The factors that assist the population growth becomes invaluable documents to the population analyst, policy makers and would be researchers for in-depth acquisition of knowledge which actually is the focus of this study. The research study reveals that there is a significant difference existing between a woman with education, good job and knowledge and a such for the studied population the fertility of such respondents could not be compared with respondents with no education, no good job and with no exposure to the methods of child spacing. In the light of the above and based on the findings of this study, the following are recommended for both the populace and the government at all levels: -

That the idea of entry into marriage should be avoided as so many enter into the union without considering its implication on the society at large.

The idea of thinking that one must have as many children as God’s permit should be done with, this is because, having children you cannot cater for not only becomes burden to the family concern but to the society at large.

Since high family desires is linked to lack of functional education and good health facilities, government should endeavour to make these social services available to the populace;

Financial empowerment by the government should be critically looked into;

Government should legislate on the age of entry into marital union, this will go a long way in curbing the problem of high fertility in our society and

Lastly government should embark on campaign against the desires to have high family size without commensurate resources by embarking on radio, television, social media, house to house, church to church, mosque to mosque and shrine to shrine campaign to sensitize people on the menace of high fertility and early marriage

REFERENCES

- [1]. Adedini, S. A., Odimegwu, C., Imasiku, E. N., &Ononokpono, D. N. (2015). Unmet Need for Family Planning: Implication for Under-Five Mortality in Nigeria. *Journal of health, pop ulation, and nutrition*, 33(1), 187.
- [2]. Ainsworth, M., Beegle, K., &Nyamete, A. (1996). The Impact of Women’s Schooling on Fertility and Contraceptive Use: A Study of Fourteen Sub-Aaharan African Countries. *The World Bank Economic Review*, 10(1), 85-122. 6.

- [3]. Bernhardt, E. M. (1993). Fertility and Employment. *European sociological review*, 9(1), 25-42.
- [4]. Bloom, D. E., Canning, D., Fink, G., & Finlay, J. E. (2009). Fertility, Female labour Force Participation, and the Demographic Dividend. *Journal of Economic Growth*, 14(2), 79-101.
- [5]. Bratti, M. (2003). Labour Force Participation and Marital Fertility of Italian Women: The Role of Education. *Journal of Population economics*, 16(3), 525-554.
- [6]. Ezeh, A. C., Bongaarts, J., & Mberu, B. (2012). Global Population Trends and Policy Options. *The Lancet*, 380(9837), 142-148.
- [7]. Gayawan, E. & Adebayo, S. B. (2013). A Bayesian Semiparametric Multilevel Survival Modelling of Age at First Birth in Nigeria. *Demographic Research*, 28, 1339-1372.
- [8]. Gayawan, E. & Adebayo, S. B. (2014). Spatial Pattern and Determinants of Age at Marriage in Nigeria Using a Geo-Additive Survival Model. *Mathematical Population Studies*, 21(2), 112-124.
- [9]. IndexMundi (2018). Nigeria Demographics Profile 2018. Retrieved from <https://www.indexmundi.com/nigeria/demographics>.
- [10]. Kalwij, A. S. (2000). The effects of Female Employment Status on the Presence and Number of Children. *Journal of population economics*, 13(2), 221-239.
- [11]. Kreyenfeld, M. & Andersson, G. (2014). Socioeconomic Differences in the Unemployment and Fertility Nexus: Evidence from Denmark and Germany. *Advances in life course research*, 21, 59-73.
- [12]. Macro, N. P. C. A. I. (2014). Nigeria Demographic and Health Survey 2013. Calverton, Maryland, USA.
- [13]. Manning, W. D., Trella, D., Lyons, H., & Du Toit, N. C. (2010). Marriageable Women: A Focus on Participants in a Community Healthy Marriage Program. *Family relations*, 59(1), 87-102.
- [14]. Mary. O. Obiyan, Ambrose Akinlo, Peter O. Ogunjuyigbe, (2019). *European Scientific Journal* edition Vol.15, No.31 ISSN: 1857 – 7881 (Print) e - ISSN 1857- 7431
- [15]. Mekonnen, W. & Worku, A. (2011). Determinants of Fertility in Rural Ethiopia: The Case of Butajira Demographic Surveillance System (dss). *BMC public health*, 11(1), 782.
- [16]. Milazzo, A. (2014). Son preference, fertility and family structure: Evidence from reproductive behavior among Nigerian women. *World Bank Policy Research Working Paper*(6869).
- [17]. Mishra, V. & Smyth, R. (2010). Female Labor Force Participation and Total Fertility Rates in the OECD: New evidence from Panel Cointegration and Granger Causality Testing. *Journal of Economics and Business*, 62(1), 48-64.
- [18]. National Population Commission & ICF Macro International (2014). Nigeria Demographic and Health Survey 2013. Nigeria, and Rockville, Maryland, USA: NPC and ICF International NPC (2004). National Economic Empowerment and Development Strategy (needs). Abuja: National Planning Commission.
- [19]. Ogun, T. (2010). Infrastructure and Poverty Reduction: Implications for urban development in Nigeria. Paper presented at the Urban Forum.
- [20]. Olatoregun, O., Fagbamigbe, A. F., Akinyemi, O. J., Oyindamola, B., & Bamgboye, E. A. (2014). A Comparative Analysis of Fertility Differentials in Ghana and Nigeria. *African journal of reproductive health*, 18(3), 36-47.
- [21]. Patidar, H. (2018). Women's Empowerment and Fertility Behaviour among the Tribals of Rajasthan, India. *Space and Culture, India*, 5(3), 129-139.
- [22]. Ushie, M. (2009). Fertility differentially in urban and rural Nigeria: A Comparative Study of Calabar and Bendi Communities in Cross River State, Nigeria. Unpublished Ph.D Thesis of the University of Calabar, Calabar-Nigeria.
- [23]. Ushie, M., Ogaboh, A. A., Olumodeji, E., & Attah, F. (2011). Sociocultural and economic determinants of fertility differentials in rural and Urban Cross Rivers state, Nigeria. *Journal of Geography and Regional Planning*, 4(7), 383.
- [25]. World Population Review (2019). Total population by Country 2019. Retrieved from <http://worldpopulationreview.com/countries/> accessed August 15, 2019.