Original Research Article

STATISTICAL DETERMINATION OF SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS THAT INFLUENCE CONTRACEPTIVE USE BY MEN IN AFIKPO NORTH LOCAL GOVERNMENT AREA OF EBONYI STATE

ABSTRACT

This studyexamines the Statistical Determination of Socio-Economic and Demographic Factors that influence Contraceptive use by Married Men in Afikpo North Local Government Area of Ebonyi State. It is aimed at identifying the determinants of contraceptive use among married men in Afikpo North Local Government Area of Ebonyi State. A sample of four hundred and sixty one (461) married men were selected for the study through Multi-Stage sampling design.Other statistical methods include;Descriptive analysis, Cross tabulation and Logistic regression. Cross tabulation result revealed that there is a significant relationship between the independent variables and contraceptive use. Logistic regression result showed that the significant socio-economic and demographic determinants of contraceptives use among the study sample are marriage duration of at least five years, religion, education, occupation, parity, number of children living and age. The HosmerLemeshow test for goodness of fit of the logistic regression model is 87.9 percent and is highly significant (p-value > 0.05). This indicates that the model fitted is adequate.The study recommends among others that it is necessary for young couples with less than five-year experience, Muslims, the no education group, farmers, to be targeted and carried along in the campaign for the use of contraceptive methods.

Keywords: Contraceptive use, Three-stage sampling design,Cross-tabulation,Multicollinearity Test, Logistic regression, Pseudo R- square test.

I. Introduction

The persistently high level of fertility in Nigeria, combined with declining mortality, has given rise to rapid growth inthepopulation. The population growth rate has increased from 2.0% to 2.7% per annum between the periods 1987-1998 and 1998-2008 respectively. High population growth has contributed to environmental degradation, increased poverty and a deteriorating quality of life for majority of people in the country (Ejembi and Dahiru, 2013). According to the United Nations Departmentof Economic and Social Affairs Population Division (2015), the world population stood at7.5 billion (as at March 6, 2017) and it is projected to reach 8 billion by 2024. This would increase pressure on the already limited resources and aggravate various social vices.

Socio–economic and demographic factors are key variables to consider in any discussion of fertility regulation and in the evaluation of family planning program. While some factors

have contributed to an increase in contraceptive use and subsequently to a decline in fertility in some parts of Africa, it has had no impact on the levels of fertility and contraceptive use in some other parts(Locoh, 2020). The issue of family planning is an outcome of the societal definition of male and female roles.

Culturally, African men oppose family planning programmes and in many African countries men usually make decisions in matters of sex and family size. Within the frame work of family planning, one of the current issues of concern is the clamour for the involvement of men in all programme directed towards family reproductive health as opposed to the previous singular emphasis on women (Ijadunola*et al.,* 2014).

The rationale to consider men in family planning necessitates the need to study male perspectives towards many concepts such as fertility, contraception and reproductive health in general. Though, some men may be unwilling to practice birth control themselves, recent survey showedthat men are more conscious users than women when they do accept family planning (Stoke, 2000). Men are also more likely than women to persuade their friends to accept family planning, and when male family planning acceptors select female methods; they are, more often able compared to women to get their partners to use them successfully (Brown, 2019). As efforts to bring family planning to women are almost exhausted, now is the time to increase effort to include men in the family planning campaigns.Moreover, there is evidence that many African men and women believe that husbands should be the primary decision makers, regarding contraceptive use and marital sexual activity(Rashid, 2018).

Research findings have shown that most men know about contraception but not many men knew it uses (Shoral and Palmore, 2019). Statistics available have shown that only 12.5% of Nigerian males use any form of modern family planning methods (Beckman, 2013). In the year 2014, the prevalence rate of contraceptive use among married men in Nigeria was approximately 9 per cent (Ademola et al., 2014). This rate is very low in spite of the high level of sexual activity and wide spread awareness of the various contraceptive methods among many Nigerian married men. This accounts to the high unintended pregnancies and to the prevailing high maternal mortality rate (Ijadunola*et al.,*2014).

Every year, globally, 40 to 60 million women seek termination of unwanted pregnancy under safe conditions (Rashid, 2018). The consequences of unintended pregnancy are serious, imposing appreciable burden on children, women, men, families and their societies. Both unwanted and mis–timed pregnancies are known to be associated with lack of adequate knowledge and use of contraceptives, among men (Ezeh, 2016).

Consequently,knowledge of contraceptive methods does not translate to adoption of contraception. However,understanding the factors responsible for the low use of contraceptives among married men in Afikpo North L.G.A will be useful in developing effective family planning programme for married men in the study area.The situation has left us with such questions as;among those who knew its uses, what are some of the socio–economic and demographic factors that contribute to their use of contraceptive? Is it their level of education, religious affiliation, family size, sex of children, age, and etc? Therefore, the ultimate objective of this study is to identify the major socio–economic and demographic determinants of contraceptive use among married men in Afikpo North Local Government Area in Ebonyi State. Specifically, the study intends to (i)examine the relationship between socio-economic factors and contraceptive use among married men, (ii) examine the influence of demographic factors on contraceptive use among married men and (iii) identify the determinants of contraceptive use among married men. The researchers have equally made the following propositions; (i) Socio-economic factors (Marriage duration, religion, type of marriage, education level, and occupation) significantly influence contraceptive use in the study population (ii) Demographic factors (Number of children ever-born, number of children living and age) significantly influence contraceptive use in the study population.

II. Methodology

The data used for this study is a primary data derived from a survey of 461 married men in Afikpo North Local Government Area of Ebonyi State conducted fromJanuary 2023 to October 2023.

Information collected include, knowledge of contraceptive methods, major sources of information about family planning, and contraceptive method(s) ever used. For every contraceptive method the respondents identified were asked if they are currently using the contraceptive method. Respondents who had never used any method were asked their main reason(s) for not using any family planning method. Those who are currently using a method were asked their main reason for the choice of a contraceptive method, and their duration of contraceptive use. The major socio-economic and demographic variables examined in this research are type of marriage, education (level of education attained), duration of marriage, religion, occupation, number of children ever-born, number of children living and age.

Sampling Design and Sample Size

A three-stage sampling design was employed in this study. Accordingly, the sample was selected as follows.From a sampling frame of 11 autonomous communities, 5 autonomous communities were randomly selected without replacement in the first stage.A comprehensive list of the villages in the five selected autonomous communities was made. There were a total of 74 villages. The list formed the frame from which a sample of 11 villages wererandomly selected without replacement. The random selection of 11 villages (which is 15 percent of the total number of villages) was considered a representative sample and sufficient to ensure precision of results. A list of all households in the eleven selected villages was made and all the married men in each of the 168 household listed were interviewed. In all, 461 married men were identified and constituted the study sample.The dependent variable is use and non-use of any contraceptive method such as the natural methods, condoms, traditional methods etc. It is binary in form with response categories and codes as follows: Not currently using any method = 0 and currently using a method = 1. The explanatory (independent) variables in the study are marriage duration, religion, type of marriage, education, occupation, number of children ever-born, number of children living, and age.

Methods ofAnalysis

The data collected for the study were analyzed using the tools below:

- Descriptive analysis was performed to compute percentages of the variables.
- Cross tabulation was employed to examine the relationships of the Independentvariables and contraceptive use.
- Logistic regression analysis was used to estimate the relative influence of socio-economic and demographic factors on contraceptive use.

The use of logistic regression is based on the fact that the dependent variable is dichotomous.

Logistic Regression

Logistic regression is a statistical method for analyzing a data set in which there are one or more independent variables that determine an outcome. The dependent variable is dichotomous (that is, there are only two possible outcomes). The goal of logistic regression is to find the best fitting model to describe the relationship between the dichotomous (dependent variable) and a set of independent variables. The model is given by;

$$Logit(p) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + ... + \beta_k X_k + \varepsilon \qquad (1)$$

Where P is the probability of presence of the characteristic of interest, β_0 is the intercept parameter, $\beta_1 ... \beta_k$ implies one parameter for each explanatory variable.

The explanatory variables are X_1= marital duration, X_2= religion, X_3= type of marriage, X_4 = educational level, X_5 = occupation, X_6 = number of children ever-born, X_7 = number of children living, and X_8= age.

Thelogit transformation is defined as the log odds. The ratio of success to failure probabilities is called odds. The log odd of success is defined as the natural log of the odds of success. Because the log is a natural log, we undo log odds by taking the exponent (Exp (β_i)), which is approximately 2.718, to the power of the log odds.

The log odds range from minus infinity to plus infinity. Zero represents the situation where success and failure are equally likely, positive log odds values represents a greater probability of success than failure, and negative log odds values represents a greater probability of failure than success. The odds and logit are given as follows;

$$odds = \frac{p}{1-p} \text{ and } \quad Logit(p) = In(\frac{p}{1-p}) \quad (2)$$

Where, p = the probability of presence of characteristic and 1-p = the probability of absence of characteristic. Rather than choosing parameters that minimize the error sum of squares (like in ordinary regression), estimation in logistic regression chooses parameters that maximize the likelihood of observing the sample values. The forward stepwise method was used in selecting significant variables for entry in each of the models in order to minimize the problem of multicollinearity and to fit the best model.

Estimation of the logistic model coefficients

Thebinary logistic model is given by;

$$\pi(x) = \frac{\exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2)}{1+\exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2)} = \frac{\exp(X\beta\ )}{1+\exp(-X\beta\ )} = \frac{1}{1+\exp(-X\beta\ )}$$

(3)

where π is the probability that an observation is in a specified category of the binary Y variables, generally called the ‘‘success probability’’.The model describes the probability of an event happening as a function of X variables. With the logistic model, estimates of π will always be between 0 and 1 since the numerator $\exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2)$ must be positive value and the denominator (1 + numerator). Because logistic regression predicts probability rather than just classes, one can fit it using likelihoods. For each training data point, we have a vector features, $x_i$and an observed class, y_i. If y_i = 0, the likelihood function for simple logistic regression is

$$L(\beta_0, \beta_1) = \pi_{i=1}^{n} p(x_i)^{y_i}[1-p(x_i)]^{1-y_i} \quad (4)$$

The log – likelihood turns products into sums.

$$Log(L) = \sum_{i=1}^{n} y_i Log\, p(x_i) + (1 - y_i) Log[1 - p(x_i)]^{1-y_i}$$
$$= \sum_{i=1}^{n} - Log(1) + e^{(\beta_0 + \beta_1 x_i)} + \sum_{i=1}^{n} y_i (\beta_0 + \beta_1 x_i) \quad (5)$$

To find the maximum likelihood estimates we are expected to differentiate the log likelihood with respect to the parameters and set the derivatives equal to zero to get the estimates. But since the equation is non-linear in β, the iteratively re-weighted least squares (IRLS) method can be applied to get the solutions.

The maximum likelihood estimator of β can be obtained by using the iteratively re-weighted least squares (IRLS) method as follows: $\hat{\beta}_{MLE} = X'\hat{W}\hat{Z}$

Where $\hat{W} = diag[\hat{P}_1(1-\hat{P}_1)]$ and $\hat{Z} = Log(\hat{P}_1) + \frac{y_i - \hat{P}_1}{\hat{P}_1(1-\hat{P}_1)}$ is the ith element of the vector $\hat{Z}$.

The hats in the equations show the iterative process.Consider a model with two predictors X_1 and X_2, and one binary (Bernoulli) response variable (Y) which denote p = P(Y=1). We assume a linear relationship between the predictor variables, and the log odds of the event that Y=1. This linear relationship can be written in the following mathematical form

$$\ell \Rightarrow \log b \frac{p}{1-p} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \quad (6)$$

Where ℓ *is* the log-odds, b is is the base of the logarithm and β_i are parameters of the model.

We can recover the odds by exponentiating the

$$\log - odds \frac{p}{1-p} = b^{\beta_0 + \beta_1 X_1 + \beta_2 X_2} \quad (7)$$

By simple algebraic manipulation, the probability that Y =1 is

$$P = \frac{b^{\beta_0 + \beta_1 X_1 + \beta_2 X_2}}{b^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + 1}} \quad (8)$$

The above formula shows that once β_i are fixed, we can easily compute either the log-odds that Y =1 for a given observation, or the probability that Y=1 for a given observation. The main use-case of a logistic model is to be given an observation (X_1, X_2), and estimate the probability P that Y= 1. In most applications, the base b of the logarithm is usually taken to be e. However, in some cases it can be easier to communicate results by working in base 2, or base 10.

We consider an example with b = 10, and coefficient β_0 =-3, β_1 =1, and β_2 =2.The model is $\ell \Rightarrow \log 10 \frac{p}{1-p} \Rightarrow \ell = -3 + X_1 + 2X_2$ where p is the probability of the event that Y = 1. This can be interpreted as follows: β_0 =-3 is the y- intercept. It is the log-odds of the event that Y=1, when the predictors X_1= X_2 = 0. By exponentiation, we can see that when X_1 = X_2 = 0 the odds of the event that Y =1 are 1 to 1000, or 10^{-3}.Similarly, the probability of the event that Y=1 when X_1 = X_2 = 0 can be computed as $\frac{1}{1000+1} = \frac{1}{1001}$

β_1 =1 means that increasing X_1 by 1 increases the log-odds by 1. So if X_1 increases by 1, the odds that Y=1 increases by a factor of 10^1. β_2 =2 means that increasing X_2 by 1 increases the log-odds by 2. So if X_2 increases by 1, the odds that Y=1 increases by a factor of 10^2. This implies that the effect of X_2 on the log-odds is twice as great as the effect of X_1, but the effect on the odds is 10 times greater.

Interpretation of Logistic Regression Result

The Coefficient: The logistic coefficient is the expected amount of change in the logit for one unit change in the predictor. The logit is what is being predicted, it is the odds of the outcome variable. The closer a logistic coefficient is to zero, the less influence the predictor has in predicting the logit. The table also displays the standard error, Wald statistic, degrees of freedom, and significance level, (p-value), as well as the exponent (Exp (β_i)).

III. Descriptive Analytical Results

Whereas all the respondents claim to know about contraception, approximately three in every four (74.8%) currently use any method of contraception, Table 1, indicates that more than half of the respondents knew about contraception through health personnel (64.4%). The mass media being the next important source of information as 17.8% heard about it through the television, while 12.4% heard about it over the radio. Friends informed 4.1% about contraceptive methods, while 1.3% read about it from newspapers/ magazines.

This is similar to the findings in Pakistan by Shah *et al*. (2018) on the awareness and pattern of utilizing family planning services among men attending Urban Health Care Centre. This is a pointer to the importance of enhanced primary health care services in the rural communities. Of course, the media would still need to do much more work on public enlightenment about contraception. Also only 4.1% heard about contraceptives from friends and relatives and this calls for the need for workshops and seminar to be organized on the use of contraceptives to ensure that correct and adequate information about family planning is spread.

Table 1: Percentage Distribution of Respondents who knew about Contraceptionby Source of Information.

Sources of information	**No of married men**	**Percentage (%)**
Newspaper/Magazine	6	1.3%
Radio	57	12.4%
Television	82	17.8%
Health Worker(Health Personnel)	297	64.4%
Friends	19	4.1%
Total	461	100%

Source: Afikpo North L.G.A Survey Data

In Table 2, majority of the respondents (53.6%), were currently using modern contraceptive methods, 11.5% were using natural methods, 9.7% were using traditional methods while 25.2% were not using any method at all. The reason for high contraceptive prevalence rate found among married men in Afikpo North L.G.A of Ebonyi State can be attributed to the constant supply of services by the state Governor to the health personnel during family planning programme and the demand on the part of the population to use these services. The main reasons given for the choice

of contraceptive methods were affordability and availability (48.7%), followed by effectiveness and reliability (24.3%) (Table 3). Half of the non-users (50.0%) did not have any reason for not using any method (Table 4).

Table 2: Percentage Distribution of Respondentsby Method of Contraceptive Currently Being used.

Currently used Contraceptive methods	No of married Men	Percentage (%)
None	116	25.2%
Natural	53	11.5%
Traditional methods	45	9.7%
Modern methods	247	53.6%
Total	461	100%

Source: Afikpo North L.G.A Survey Data

Table 3: Percentage Distribution of Current Users of Contraception by Reason for choice of Method.

Main reasons for choice of contraceptive method	No of married men	Percentage (%)
No reason	52	15.1%
Affordable and available	168	48.7%
Little or no side effect	41	11.9%
Effective and reliable	84	24.3%
Total	345	100%

Source: Afikpo North L.G.A Survey Data

Table 4: Percentage Distribution of Non-Users by Reason for not using any Method of Contraception.

Main reason for not using any method	No of married men	Percentage (%)
No reason	58	50.0%
Side effect	2	1.7%
Wife's disapproval	7	6.0%
Wants more children	22	19.0%
Religious prohibition	6	5.2%

Reduction of sexual pleasure	21	18.1%
Total	116	100%

Source: Afikpo North L.G.A Survey Data

Table 5a: Distribution of Respondents by Current use of Family Planning Methods by Selected Socio-Economic Factors.

Socio-economic factors	Current use of family planning methods						
	No (%)	Yes (%)	Total (%)	% of Respon-dents	CPR	χ^2	P-value
Marital duration (in years)							
0-4	8(22.2)	28 (77.8)	36(100.0)	7.8	6.0	24.142	0.005
5 +	108(29.5)	317(70.5)	425(100.0)	92.2	68.8		
Total	116(25.2)	345(74.8)	461(100.0)	100			
Religion							
Christian	50 (19.5)	207(80.5)	257(100.0)	55.7	44.9	11.312	0.000
Muslim(Islam)	16 (34.8)	30 (65.2)	46 (100.0)	10.0	6.5		
Traditional	50 (31.6)	108(68.4)	158(100.0)	34.3	23.4		
Total	116(25.2)	345(74.8)	461(100.0)	100			
Type of marriage							
Monogamy	60(18.9)	257(81.1)	317(100.0)	68.8	55.7	32.317	0.000
Polygamy	56(38.9)	88 (61.1)	144(100.0)	31.2	19.1		
Total	116(25.2)	345(74.8)	461(100.0)	100			
Educational level							
No Education	19 (26.4)	53 (73.6)	72 (100.0)	15.6	11.5	9.195	0.021
Primary Education and above	97 (24.9)	292(75.1)	389(100.0)	84.4	63.3		
Total	116 (25.2)	345(74.8)	461(100.0)	100			
Occupation							
Farming	25 (23.4)	82 (76.6)	107(100.0)	23.2	17.8	24.420	0.025
Non Farming	91 (25.7)	263(74.3)	354(100.0)	76.8	57.0		
Total	116 (25.2)	345(74.8)	461(100.0)	100	74.8		

N/B: (1) Figures in brackets are percentages.
(2) CPR = Contraceptive prevalence rate

Tables 5a and 5b show that the proportion of respondents using contraception increases with age. Hence, the large contribution to CPR (29.5%) of the respondents of 40 and above, compared to

18.2% contributed by those of 35-39, and smaller proportion contributed by the younger men. The reason behind the above result is that most married men who are aged 40 and above are already through with child bearing and may see reasons to adopt contraception to avoid unwanted pregnancy. Those within the age range of 25-29, 30-34, and 35-39 must have given birth to one or two children and may see reasons to adopt child spacing which may lead them to resort to the use of contraception. Married men within the age range of 20-24 can be classified as newly married and may have need of children and at such may not want to adopt contraceptive measure. Most of the respondents using contraception were Christians (44.9%), non-farming (57.0%), had formal education (63.3%), were monogamous union (55.7%), had given birth at least two children (71.1%), having at least two children living (66.6%) or had five years or more marriage experience (68.8%).

The least group of respondents using contraception were the Muslims (6.5%), those who had never given birth (1.3%), and those who had at most four years of marriage experience (6.0%).

Table 5b: Distribution of Respondents by Current use of Family Planning Methods by Selected Demographic Factors

Demographic factors	**Current use of family planning methods**						
	No (%)	**Yes (%)**	**Total (%)**	**% of Respon-dents**	**CPR**	χ^2	**P-value**
No. of children ever born							
0	10 (62.5)	6(37.5)	16(100.0)	3.5	1.3	16.116	0.002
1	32(74.4)	11(25.6)	43(100.0)	9.3	2.4		
2 +	74(18.4)	328(81.6)	402(100.0)	87.2	71.1		
Total	116(25.2)	345(74.8)	461(100.0)	100			
No. of children Living							
0	24(92.3)	2(7.7)	26(100.0)	5.6	0.4	56.116	0.016
1	19(34.5)	36(65.5)	55(100.0)	12.0	7.8		
2 +	73(19.2)	307(80.8)	380(100.0)	82.4	66.6		
Total	116(25.2)	345(74.8)	461(100.0)	100			
Age groups (in years)							

22-24	0 (0.0)	2(100.0)	2(100.0)	0.4	0.4	6.017	0.003
25-29	13(19.4)	54 (80.6)	67(100.0)	14.5	11.7		
30-34	26(27.4)	69(72.6)	95(100.0)	20.6	15.0		
35-39	30(26.3)	84 (73.7)	114(100.0)	24.7	18.2		
40 and above	47(25.7)	136(74.3)	183(100.0)	39.7	29.5		
Total	116(25.2)	345(74.8)	461(100.0)	100	74.8		

Source: Afikpo North L.G.A Survey Data

*** The youngest respondent was 22 years old at the time of the survey.**

The low contribution to CPR of 1.3% by married men who had never given birth to a child is understandable as they would be desirous to have a child. Married men who have one child, and were using contraception; probably were using it for child spacing. The high contribution to CPR of married men who have two or more children (71.1%) could obviously be because most of them want no more children and want to avoid the risk of unwanted pregnancy.Clearly, as the number of children ever born or surviving increases, contraceptive prevalence rate increases; possibly for child spacing or for family size limitation.

Test for Multicollinearity

The results displayed in Table 6 for the test of multicollinearity among the predictor variables using 1% two tailed significance level showed that there is no multicollinearity since the variance inflation factor (VIF) values lie between one and ten (1-10). (James *et al*., 2017).

Table 6:Test for the Presence of Multicollinearity among the Explanatory Variables.

Unadjusted Coefficients			Standardized Coefficients			Collinearity Statistics	
Model	β	Std. Error	Beta	T	Sig.	Tolerance	VIF
(Constant)	0.277	0.198		1.395	0.164		
Age	-0.009	0.018	-0.024	-0.517	0.605	0.808	1.238
Religion	-0.051	0.020	-0.107	-2.527	0.012	0.962	1.040
Type ofmarriage	-0.148	0.043	-0.160	-3.460	0.001	0.804	1.244
Marriage duration	-0.068	0.019	-0.152	-3.594	0.000	0.957	1.044
Educational level	-0.019	0.050	-0.016	-0.381	0.704	0.967	1.034
Occupation	-0.085	0.045	-0.083	-1.882	0.061	0.880	1.136
Number of CEB	0.282	0.080	0.278	3.540	0.000	0.278	3.599
Number of CL	0.111	0.064	0.138	1.753	0.080	0.274	3.645

* CEB = Children Ever Born * CL = Children Living

Multivariate Results

Table 7 presents the parameter estimates of the logistic regression coefficients for the model containing only socio-economic predictors.

The model containing only socio-economic predictors indicates that only duration of marriage, religion, and educational level had significant influence on the use of contraception in the study population. Respondents who had been married for at least five years were more likely to use contraception than their counterparts who had been married for a shorter duration. Religion, especially traditional religion tends to raise the odds of contraceptive use compared to Christian religion. Respondents who had at least primary education were 3.2 times more likely to use contraceptive than their counterparts who had no education.

Table 7: Result of Logistic Regression Model on Socio-Economic Predictors of Contraceptive use among Married Men in Afikpo North L.G.A., Ebonyi State.

							95.0% C.I.forExp(β)	
Variables	B	**S.E.**	**Wald**	**Df**	**Sig.**	**Exp(β)**	**Lower**	**Upper**
Marriage duration (in years)								
0-4(RC)	-	-	0.039	1	0.836	1.000	-	-
5 +	3.135	0.649	23.349	1	0.000	22.994	6.446	28 .016
Religion								
Christian (RC)	-	-	23.411	2	0.000	1.000	-	-
Muslim(Islam)	0.065	0.368	0.031	1	0.861	1.067	0.106	2.349
Traditional	0.712	0.240	8.801	1	0.003	2.039	0.150	9.513
Educational level								
No Education (RC)	-	-	2.133	1	0.711	1.000	-	-
Primary Education and above	1.149	0.556	4.278	1	0.039	3.155	2.218	4.117
Constant							-	-
	1.090	.107	103.132	1	0.000	2.974		

Given that X_1= Marriage duration, X_2= Religion, X_3= Type of marriage, X_4 = Educational level, and X_5= Occupation; the model for socio-economic variables only can therefore be written as:

$$Log(\frac{p}{1-p}) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

$$= 1.090 + 3.135X_1 + 0.777X_2 + 1.149X_4$$

Model interpretation:

When all the variables considered in this study are held constant (β_0), the ratio of success to failure probability on contraceptive use among married men in Afikpo North L.G.A. is 1.090. The individual contributions (ratio of success to failure probability) of other variables on contraceptive use are as follows: $\beta_1 = 3.135$, $\beta_2 = 0.777$, $\beta_3 = 0$, $\beta_4 = 1.149$,$\beta_5 = 0$.

Table 8 presents the likelihood ratio chi-square statistic which can be calculated as -2*L(null model) - (- 2*L(full model)) = 502.753 – 492.910 = 9.843.The p – value from the likelihood ratio test, 0.414> 0.05.

Table 8. Model Fitting CriteriaforSocio-Economic Predictors of Contraceptive use

Model	-2 Log likelihood	Chi-square	DF	P-value
Null model	502.753	9.843	6	0.414
Full model	492.910			

Table 9 indicates that Cox and Snell has a value of 0.585 (58.5%), Nagelkerke with a value of 0.851 (85.1%) and Hosmer and Lemeshow with a value of 0.896 (89.6%) show proportion of contributions of the predictor variables in predicting the outcome variable.

Table 9. Pseudo R- Squarefor Socio-Economic Predictors of Contraceptive use

Cox and Snell	0.585
Nagelkerke	0.851
Hosmer and Lemeshow	0.896

Table 10reveals that all the predictor variables increased the logit since their values are more than one. Respondents who ever had two or more children were 22.2 times more likely than those who have no child to use contraceptives. With regards to number of living children, married men who have two or more living children were 6.1 times more likely than married men who have no living child to use contraceptives. Married men aged 35-39 and 40+ were 8.1 and 9.5 times more likely than those aged 20-24 to use contraceptives.

Thus, the demographic predictors that significantly raised the odds include parity (those who ever had two or more children), Number of children living (those who have two or more children living), age group (35+ years).

Table10: Result of Logistic Regression Model on Demographic Predictors of Contraceptive use among Married Men in AfikpoNorth L.G.A., Ebonyi State.

Varibles	β	S.E.	Wald	DF	Sig.	Exp(β)	95.0% C.I .for EXP(B)	
							Lower	Upper
Parity								
0 (RC)	-	-	0.017	2	0.897	1.000	-	-
1	0.054	0.310	0.031	1	0.861	1.056	0.518	2.851
2+	3.098	0.785	15.570	1	0.000	22.154	1.273	24.264
Number of children Living								
0 (RC)	-	-	0.292	2	0.640	1.000	-	-
1	0.536	0.568	0.892	1	0.345	1.710	0.562	5.202
2+	1.801	0.525	11.763	1	0.001	6.056	0.059	7.412
Age groups (in years)								
20-24 (RC)			2.133	4	0.117	1.000	-	-
25-29	0.581	0.408	2.030	1	0.154	1.789	0.804	3.980
30-34	0.470	0.282	2.781	1	0.095	1.600	0.921	2.778
35-39	2.096	0.620	11.429	1	0.004	8.136	1.029	12.314
40 and above	2.247	0.338	44.090	1	0.000	9.459	1.669	11.161
Constant	1.461	0.131	124.036	1	0.000	4.309	-	-

Given that X_6 = Number of children ever born, X_7 = Number of children living and X_8= age; the model for demographic predictors only is:

$$Log(\frac{p}{1-p}) = \beta_0 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$$

$$= 1.461 + 3.1526X_6 + 2.337X_7 + 5.394X_8$$

Model Interpretation:

When all the variables considered in this study are held constant (β_0), the ratio of success to failure probability on contraceptive use among married men in Afikpo North L.G.A. is 1.461. The individual contributions (ratio of success to failure probability) of other variables on contraceptive use are as follows: β_6= 3.152, β_7 = 2.337 and β_8 = 5.394.

Table 11 presents the likelihood ratio chi-square statistic which can be calculated as -2*L(null model) - (- 2*L(full model)) = 502.114 – 486.883 = 15.231. The p – value from the likelihood ratio test, 0.833 > 0.05.

Table 11: Model Fitting Criteria for Contraceptive use on Demographic Factors

Model	Model fitting criteria	Likelihood ratio test		
	-2 Log likelihood	Chi-square	Df	P-value
Null Model	520.114	15.231	8	0.833
Full Model	486.883			

Table 12 shows that Cox and Snell has a value of 0.618 (61.8%), Nagelkerke with a value of 0.725 (72.5%) and Hosmer and Lemeshow with a value of 0.699 (69.9%) respectively shows proportion of contributions of the predictor variables to predicting the outcome variable.

Table 12:Pseudo R- square for Contraceptive use on Demographic Factors

Cox and Snell	0.618
Nagelkerke	0.725
Hosmer and Lemeshow	0.699

Table 13 presents the parameter estimates of the logistic regression model predicting the probability of contraceptive use among married men in Afikpo North L.G.A.

The predictor variables that increased the logit include marriage duration (of 5 years and above), religion (Muslim and Traditional), education (Primary and above), number of children ever born

(two or more children), number of living children (two or more living children), and age (40 and above). The other predictor variables decreased the logit.

Table 13:Result of Logistic Regression Model Predicting the Probability of Contraceptive use on Married Men in Afikpo North L.G.A, Ebonyi State.

Variables	B	Se(β)	Wald(χ^2)	DF	Sig	Exp(β)	95% C.I	
							Lower	Upper
M D(in years)								
0-4(RC)	-	-	**3.821**	**1**	**0.995**	**1.000**	-	-
5 +	**2.189**	**0.522**	**17.582**	**1**	**0.000**	**8.926**	**2.149**	**18.101**
Religion								
Christian (RC)	-	-	**8.736**	**2**	**0.013**	**1.000**	-	-
Muslim(Islam)	**0.537**	**0.565**	**0.903**	**1**	**0.342**	**1.711**	**0.509**	**3.379**
Traditional	**0.669**	**0.312**	**4.598**	**1**	**0.006**	**1.952**	**0.510**	**2.572**
Educational level								
No education (RC)	-	-	**0.813**	**1**	**0.352**	**1.000**	-	-
Primary education and above	**0.969**	**0.233**	**17.277**	**1**	**0.000**	**2.635**	**1.289**	**2.937**
Occupation								
Farming (RC)	-	-	**0.217**	**1**	**0.897**	**1.000**	-	-
Non-farming	**-0.913**	**0.650**	**1.973**	**1**	**0.011**	**0.401**	**0.054**	**0.691**
Parity								
0 (RC)	-	-	**9.684**	**2**	**0.052**	**1.000**	-	-
1	**-0.048**	**0.359**	**0.017**	**1**	**0.895**	**0.953**	**0.518**	**1.849**
2+	**0.712**	**0.240**	**8.801**	**1**	**0.003**	**2.039**	**1.273**	**3.264**
NLC								
0 (RC)	-	-	**1.939**	**2**	**0.108**	**1.000**	-	-
1	**-0.221**	**0.523**	**0.179**	**1**	**0.672**	**0.802**	**0.288**	**2.234**
2+	**0.797**	**0.312**	**6.529**	**1**	**0.011**	**2.219**	**0.051**	**3.412**
Age groups(in years)								
20-24 (RC)	-	-	**0.903**	**4**	**0.237**	**1.000**	-	-
25-29	**-0.506**	**0.582**	**0.756**	**1**	**0.385**	**0.603**	**0.193**	**1.887**
30-34	-	**0.282**	**2.781**	**1**	**0.095**	**0.625**	**0.921**	**2.778**

35-39	**0.470 - 2.133**	**0.617**	**11.867**	**1**	**0.001**	**0.118**	**0.029**	**2.516**
40 and above	**0.969**	**0.233**	**17.277**	**1**	**0.000**	**2.635**	**1.669**	**4.161**
Constant	**1.356**	**0.189**	**51.332**	**1**	**0.000**	**3.879**	**-**	**-**

Note: RC = Reference category, NLC = Number of children ever born, MD = Marriage duration.

Given that X_1= marriage duration, X_2= religion, X_3= type of marriage, X_4 = educational status, X_5 = occupation, X_6 = number of children ever-born, X_7 = number of living children, and X_8 =.Age The model for Socio-economic and Demographic variables is:

$$Log(\frac{p}{1-p}) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$$

$$= 1.356 + 2.189 X_1 + 1.206 X_2 + 0.969 X_4 - 0.913 X_5 + 0.664 X_6 + 0.576 X_7 - 2.140 X_8$$

Model Interpretation:

When all the independent variables considered in this study are held constant (β_0), the ratio of success to failure probability on contraceptive use among married men in Afikpo North L.G.A. is 1.356. The individual contributions (ratio of success to failure probability) ofother variables on contraceptive use are as follows: β_1 = 2.189, β_2 = 1.208, β_3 = 0, β_4 = 0.969, β_5 = -0.913, β_6 = 0.664, β_7 = 0.576 and β_8 = -2.14.

Table 14 presents the likelihood ratio chi-square statistic which is calculated as -2*L(null model) - (- 2*L(full model)) = 120.114 – 99.642 = 15.231. The p – value from the likelihood ratio test, 0.236 > 0.05.

Table 14: Model Fitting Criteria for Socio-Economic Factors and Demographic Factors and Contraceptive use.

Model	Model fitting criteria	Likelihood ratio test		
	-2 Log likelihood	Chi-square	Df	P-value
Null model	120.114	20.472	14	0.236
Full model	99.642			

Table 15 indicate that Cox and Snell has a value of 0.598 (59.8%), Nagelkerke with a value of 0.885 (88.5%) and Hosmer and Lemeshow with a value of 0.879 (87.9%) respectively shows proportion of contributions of the predictor variables to predicting the outcome variable.

Table 15: Pseudo R- Squarefor Socio-Economic Factors and Demographic Factors and Contraceptive use

Cox and Snell	0.598
Nagelkerke	0.885
Hosmer and Lemeshow	0.879

IV. Results and Discussion

Whereas all the respondents claimed to know about contraception, approximately three in every four (74.8%) currently use any method of contraception, Table 1, indicates that more than half of the respondents knew about contraception through health personnel (64.4%). The mass media being the next important source of information as 17.8% heard about it through the television, while 12.4% heard about it over the radio. Friends informed 4.1% about contraceptive methods, while 1.3% read about it from newspapers/ magazines.

Respondents with five or more yearsexperienced in marriage were 8.9 times more likely than those with less than four years to use contraceptives. The reduced effect of marriage duration on contraceptive use reflects the important influence of number of children ever born and the number of surviving children in particular.

The effect of religion on the use of contraceptives although still strong, was slightly attenuated. The result indicates that adherents of traditional religion were now 1.95 times more likely than their Christian counterpart to use contraceptives. This suggests that regardless of religious affiliation, married men in Afikpo North L.G.A want to have children.

The effect of education remained strong, but slightly reduced in the presence of demographic variables. When only socio-economic factors were considered, respondents with at least primary education were 3.16 times more likely than those with no formal education to use contraceptives. In the presence of demographic variables, they were 2.64 times more likely than their counterparts with no education to use contraceptives. The slight reduction of the effect of education on contraceptive use could be due to the lumping together of all the respondents with some education into only one category.

In the case of occupation, married men who are non-farmers were 0.4 less likely than those who are farmers to use contraceptives. Occupation had no significant influence on use of contraceptives in model 1. However, in the presence of demographic variables, occupation

exerted a strong reducing influence on the use of contraceptives. The result indicates that respondents in no-farming occupation were less likely to use contraceptives. This result is contrary to expectation, but could have resulted from the fact that the ‘‘non-farming’’ category represents an amorphous group (that may include artisans, businessmen, civil servants and professionals).

Number of children ever born, number of children living and age were all important predictors of contraceptive use in model 2. The influence of these demographic predictors remained strong in the presence of socio-economic factors; however the extent of their influence was reduced. Respondents who ever had two or more children were 2.0 times more likely as those who have no child to use contraceptives. Considering number of children living, married men who have two or more living children were 2.2 times more likely than married men who have no living child to use contraceptives. Married men whose aged 40 years and above were 2.6 times more likely than those who aged 20-24 to use contraceptives.

In other words, when both socio-economic and demographic variables were simultaneously considered, (see Table 13) to determine the influence of the socio-economic and demographic factors on contraceptive use, it was observed that men who had been married for five years or more were now 8.9 times more likely to use contraceptive than those who had been in marriage for shorter duration. This indicates that the effect of marriage duration is mediated by demographic variables such as number of children ever born and particularly number of living children. Indeed, the result showed that married men in Afikpo North Local Government Area tend to consider use of contraception only if they have at least two living children. This is consistent with the cultural expectations of the society that couples should bear children.

Age of the respondents also had similar modifying effect of marriage duration on the use of contraception among the study population, particularly for those aged 35 years and above.

V. Summary Conclusionand Recommendations

This study has examined the Statistical Determination of Socio-Economic and Demographic Factors that influence Contraceptive use by Married Men in Afikpo North Local Government Area of Ebonyi State. It is aimed at identifying the determinants of contraceptive use among married men in Afikpo North Local Government Area of Ebonyi State. A sample of four hundred and sixty one(461)

married men were selected for the study through Multi-stage sampling design. Other statistical methods include; Descriptive analysis, Cross tabulation and Logistic regression. Cross tabulation result revealed that there is a significant relationship between the independent variables and contraceptive use. Logistic regression result showed that the significant socio-economic and demographic determinants of contraceptives use among the study sample are marriage duration of at least five years, religion, education, occupation, parity, number of children living and age. The HosmerLemeshow test for goodness of fit of the logistic regression model is 87.9 percent and is highly significant (p-value > 0.05). This indicates that the model fitted is adequate.The knowledge (awareness) of respondents about contraception was high among the respondents. This is expected in light of much enlightenment that is on-going on the issue of family planning in Ebonyi State and the country at large.

From this study the important predictors of contraceptive use among married men in Afikpo North L.G.A include marriage duration of at least five years, education, having at least two children, religion and age of 40 and above.Since marriage duration, religion, education, number of children ever born, number of children living, occupation, age, significantly change the odds, it is therefore necessary for young couples with less than five-year experience, Muslims, the no education group, farmers, to be targeted and carried along in the campaign for the use of contraceptive methods.

The mass media should also be encouraged to do more in public enlightenment on the benefits of contraceptive use since the mere knowledge of contraceptive methods does not lead invariably to adoption of contraception.

Finally, it is also necessary that for further studies additional variables like wealth index, fertility preferences (want more children, undecided, or want no more, sex preference) etc. should be included in the model to enhance the understanding of the relationship between the dependent variable and the independent variables.

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