

# Key Determinants of Contraceptive Use Among Married Women in North-Eastern Region of Nigeria

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**Abstract**— This paper examines the key determinants of contraceptive use in the North-Eastern part of Nigeria. It employed 5309 sub-sample of married women representing the North-East region of Nigeria from the 2013 nationally representative Nigeria Demographic and Health survey. It employed logistics regression statistical techniques in the analysis. Results present direct and indirect effects of predictors of contraceptive use. Predictors that had direct effects on contraceptive use were; state of residence, wealth status, number of living children, and told about family planning (FP) from health facility, while those with indirect effects were; education, religion, type of employment, husband/partner's education, heard about FP from TV last few months, and person who usually decides on household purchases, and person who decides on visit to family/relatives had joint direct effect (Nagelkerke  $R^2$ , explained variation = 38%). The odds of contraceptive use varied significantly by state of residence, while the odds increased with; higher wealth status, among respondents told about FP at health facility, and decreased significantly among those who husbands/partner decides on respondent's visit to family/relative. These findings are crucial to policy and programs geared to increase contraceptive use in the north-east region of Nigeria.

**Keywords** – Contraceptive Use; Family Planning; Socio-Demographic; Decision Making

## 1. INTRODUCTION

Nigeria's population is well over 180 million [1] and total fertility rate is at a high of 5.5 while contraceptive use is about 15%. Although Nigeria's contraceptive use has been consistently low, the 2013 Nigeria Demographic and Health Survey (NDHS) shows that North-East Region has among the highest fertility rate (6.3) and the lowest contraceptive rate of 3% [2]. Persistent low contraceptive use and high fertility rate have negative impacts on quality of life. At the other side of the equation is poverty prevalence rate in Nigeria which is quite high, with estimate by the National Bureau of Statistics [3] of 61.2% with North-East region the hardest hit especially with the protracted insurgency and insecurity in the region.

Evidence suggest that parents with large family find it difficult to feed and educate their children which contribute to the high level of poverty in the country. Most women are poor and disadvantaged and most of the death recorded is caused by lack of access to proper health care [4]. In order to reduce poverty among the disadvantaged population especially in the North-East region where conditions of life have deteriorated considerably in recent times, it is necessary to provide evidence on how to promote family planning among households. With the aim of attaining smaller family size in the long-run thus, contributing to reducing challenges of sustainable future in the region.

Evidence suggest that socio-demographic variables such as age [5], place of residence [6], education [7,8,9], number of living children [7], and religion [10,11,12] have influence on contraceptive use. Other socio-demographic factors in the literature influencing contraceptive use include number of co-wives [13,14], work status [7], and husband's education [15,16,17,18].

Evidence also showed that exposure to FP information affects contraceptive use [19,20,21], and the

dynamics of household decision making affects contraceptive use [22,10,23].

This study shed more insights on contraception dynamics in the North-East region of Nigeria by examining the relationships between contraceptive use and socio-demographic factors [24,25,26], effect of exposure to family planning information, household decision making and contraceptive use among married women in the region with a view to reducing fertility rate through evidence based support for family planning (FP) and contraceptive use behavior thus, contributing to achieving sustainable future espoused by SDG 3.7.

## 2 METHODS

### 2.1 Study Design & Description

This study used the National Demographic and Health Survey (NDHS) data of 2013. The Demographic and Health Surveys (DHS) are well established nationally representative studies carried out in about 100 countries all over the world, mostly in less developed countries. The DHS data includes information on population and health indicators used for planning, decision making, and policy in the countries.

The 2013 NDHS employed three-staged stratified sampling procedure. In the first stage localities were separated by rural and urban areas, and 893 localities were selected with probability proportion to size (PPS). In the second stage 904 enumeration areas (EAs) were selected with equal probability of selection, and an updated sampling frame of all households was implemented. In the third stage, 45 households were selected from each of the 904 EAs using equal probability systematic sampling technique. In total, 40,680 household were selected 16,740 urban, and 23,940 rural. All women aged 15-49 who were usual members of the selected household or who spent the night before the survey in the household were interviewed

[2].

This study used extracted sub-sample of 5309 married women living in the North-East region of Nigeria. Survey instruments were mostly similar to those of past surveys that have passed the test of validity and reliability. Survey instruments among others covered socio-demographic and economic variables including age, state of residence, place of residence, highest educational level, religion, wealth index, number of co-wives, type of employment, number of living children, and husband’s background factors i.e. age, education, and type of employment. Other variables employed in this paper were on exposure to family planning (FP) information, household decision making, and contraceptive use [3].

### 2.2 Model Specifications

Logistic regression model explaining the relationship between contraceptive use and predictors is presented below.

$$C = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + e, \quad n = 1, 2, 3, \dots, 12$$

where C is contraceptive use,  $\beta$  is the constant / intercept term,  $\beta_s$  are the regression coefficients suggesting strength of the relationship, X’s are the independent variables i.e. X<sub>1</sub> (age), X<sub>2</sub> (state of residence), X<sub>3</sub> (place of residence), X<sub>4</sub> (highest educational level), X<sub>5</sub> (religion), X<sub>6</sub> (wealth index), X<sub>7</sub> (Co-wives) X<sub>8</sub> (type of employment), X<sub>9</sub> (number of living children), X<sub>10</sub> (husbands age), X<sub>11</sub> (husbands’ education), X<sub>12</sub> (husbands type of work) X<sub>13</sub> (heard FP on radio), X<sub>14</sub> (heard FP on TV), X<sub>15</sub> (at health facility told about FP), X<sub>16</sub> (read about FP in a Poster), X<sub>17</sub> (person who decides on health care), X<sub>18</sub> (person who decides on large household purchases), X<sub>18</sub> (person who decides on visit to family/relatives), and e is the error term.

Analysis included four models. Model I examined the direct relationships between contraceptive use and socio-demographic and economic variables, Model II examined direct relationships between contraceptive use and exposure to FP predictors, Model III examined the relationships between contraceptive use and household decision making factors, and Model IV teased out the direct and indirect relationships between contraceptive use and all predictors. Relationships were tested using three statistical significant levels, .05, .01, and .001.

## 3. RESULTS

### 3.1 Sample Description

**Table 1: Percentage Frequency distribution of background factors**

	Variable	Total (Total N = 5309)	Percent (%)
1	Age no Respondents		
	15-19	576	10.8
	20-24	971	18.3
	25-29	1089	20.5
	30-34	848	16.0
	35-39	763	14.4
	40+	1062	20.0
2	State of Residence		
	Yobe	912	17.2
	Borno	597	11.2
	Adamawa	804	15.1
	Taraba	1016	19.1
	Gombe	905	17.0
	Bauchi	1075	20.2
3	Place of Residence		
	Rural	4202	79.1
	Urban	1107	20.9
4	Women’s Education		
	No Education	3632	68.4
	Primary	848	16.0
	Secondary	649	12.2
	Higher	180	3.4
5	Religion		
	Islam – Trad	4366	82.5
	Catholic	138	2.6
	Other Christians	786	14.9
6	Wealth Index		
	Poorest	2082	39.2
	Poorer	1558	29.3
	Middle	837	15.8
	Richer	511	9.6
	Richest	321	6.0
7	Number of Co-Wives		
	No other wives	3051	57.7
	One or more	2239	42.3
8	Type of Employment		
	Not working	2389	45.6
	Informal	1282	24.5
	Formal	1570	30.0
9	No of Living Children		
	None	601	11.3
	1-2	1533	28.9
	3-4	1446	27.2
	5+	1730	32.6
10	Husband’s Age		
	34 or younger	1545	29.1
	35-49	2375	44.7
	50 or older	1389	26.2
11	Husband’s Education		
	No education	3099	58.7
	Primary	716	13.6
	Secondary	887	16.8

	Higher	579	11.0
	<b>Husband's employment</b>		
	Not working	39	0.7
	Informal	1319	24.8
	formal	3922	73.9

Table 1 above shows that 10.8% of the respondents were aged 15-19, 18.3% aged 20-24, 20.5% belonged to age group 25-29, 16% were in age group 30-34, 14.4% aged 35-39 and 20% of the respondents were in age group 40+. On state of residence, Bauchi state recorded the largest percentage of respondents (20.2%) followed by Taraba state (19.1%), and Yobe, Gombe, Adamawa and Borno followed with 17.2%, 17.0%, 15.1% and 11.2% respectively. The majority of respondents lived in the rural area (79.1%), while only (20.9%) lived in the urban area. About 68.4% of the respondents were uneducated while only 31.6% had formal education. Further breakdown along education level showed that 16.0%, 12.2% and 3.4% of the respondents had primary secondary and higher education respectively. The majority of respondents were Muslims (82.5%) and 17.5% were Christians. Also, Table 1 showed that the majority of respondents belonged to poorest/poorer wealth status (68.5%) while others may be classified as middle (15.8%), richer (9.6%) and richest (6.0%). Findings showed that 57.7% of the respondents were in a monogamous relationship while 42.3% were in a polygamous relationship. Also, 45.6% of the respondents were unemployed, 24.5% had informal jobs, while 30% had formal jobs. About 11.3% of the respondents had no living children, 28.9% had 1-2 living children, 27.2% had 3-4 living children while 32.6% of the respondents had 5 or more children.

**3.2 Bivariate Results**

**Table 2: Showing bivariate association between contraceptive use and socio-demographic and economic factors, exposure to FP information, and household decision making factors**

	Independent Variable N = 5309	Not using	Using
1	<b>SOCIO-DEMOGRAPHIC &amp; ECONOMIC</b> Age of Respondents (P-value = .000)		
	15-19		
	20-24	99.5	0.5
	25-29	98.0	2.0
	30-34	97.1	2.9
	35-39	95.5	4.5
	40+	93.3	6.7
		94.4	5.6
2	<b>State of Residence (P-value = .000)</b>	.000	
	Yobe	99.0	1.0
	Borno	97.8	2.2
	Adamawa	95.9	4.1
	Taraba	92.0	8.0
	Gombe	95.5	4.5
	Bauchi	97.7	2.3
3	<b>Place of Residence (P-value = .000)</b>		

	Rural	97.2	2.8
	Urban	92.2	7.8
4	<b>Women's Education (P-value = .000)</b>		
	No Education	98.5	1.5
	Primary	93.4	6.6
	Secondary/higher	88.8	11.2
5	<b>Religion (P-value = .000)</b>		
	Islam - Trad	97.8	2.2
	Christians	88.6	11.4
6	<b>Wealth Index (P-value = .000)</b>		
	Poorest	98.2	1.8
	Poorer	97.6	2.4
	Middle	96.2	3.8
	Richer	92.4	7.6
	Richest	82.9	17.1
7	<b>Number of Co-Wives (P-value = .001)</b>		
	No other wife	95.5	4.5
	One or more	97.2	2.8
8	<b>Type of Employment (P-value = .000)</b>		
	Not working	98.1	1.9
	Informal	94.4	5.6
	Formal	94.8	5.2
9	<b>No of Living Children (P-value = .000)</b>		
	1 or 2/None	98.2	1.8
	3-4	96.2	3.8
	5+	93.8	6.2
10	<b>Husband's Age (P-value = .000)</b>		
	34 or younger	97.9	2.1
	35-49	95.1	4.9
	50 or older	96.1	3.9
11	<b>Husband's Education (P-value = .000)</b>		
	No education	98.8	1.2
	Primary	94.6	5.4
	Secondary	95.2	4.8
	Higher	85.8	14.2
12	<b>Husband's employment (P-value = .000)</b>		
	Informal/not working	98.1	1.9
	Formal	95.5	4.5
	<b>EXPOSURE TO FP INFORMATION</b>		
	Heard FP on radio last few months (P-value = .000)		
	No	97.3	2.7
	Yes	89.7	10.3
	Heard about FP on TV last few months (P-value = .000)		
	No	97.0	3.0
	Yes	84.5	15.5
	At health facility told about FP (P-value = .000)		
	No	95.2	4.8
	Yes	77.5	22.5
	Read about FP in a poster last few months (P-value = .000)		
	No	97.2	2.8
	Yes	87.2	12.8
	<b>HOUSEHOLD DECISION MAKING</b>		
	Person who usually decides on resp. health care (P-value = .000)		
	Else	93.7	6.3
	Husband-partner	97.2	2.8
	Person who usually decides on large		

household purchases (P-value = .000)		
Else	92.6	7.4
Husband-partner	97.2	3.0
Person who decides on visit to family relatives (P-value = .000)		
Else	94.8	5.2
Husband-partner	97.0	3.0

Table 2 above shows results of the association between contraceptive use and predictors. Socio-demographic and economic factors significantly associated with contraceptive use were, respondent's age (P-value = .000), state of residence (P-value = .000), place of residence (P-value = .000), education (P-value = .000), religion (P-value = .000), wealth status (P-value = .000), number of co-wives (P-value = .001), type of employment (P-value = .000), and number of living children (P-value = .000). Husband's key socio-demographic and economic factors significantly associated with contraceptive use were his age (P-value = .000), education (P-value = .000), and type of employment (P-value = .000).

Exposure to FP information variables significantly associated with contraceptive use were heard FP on radio in last few months (P-value = .000), heard about FP on TV in last few months (P-value = .000), at health facility told about FP (P-value = .000), and read about FP in a poster last few months (P-value = .000).

On household decision making, key variables significantly associated with contraceptive use were person who usually decides on respondent's health care (P-value = .000), person who usually decides on large household purchases (P-value = .000), and person who decides on visit to family relatives (P-value = .000).

### 3.3 Multivariate Results

The association between contraceptive use and independent variables established in section 3.2 above thus, suggest implicit relationship dynamics between contraceptive use and predictors which were further explored by multivariate analysis. Table 3 below shows the odds of married women using contraceptive in north-eastern Nigeria according to their socio-demographic, exposure to FP information, and household decision making factors.

The benchmark for interpreting odds ratios in this study is 1 such that odds ratios above 1 is termed more likely than the reference category, and values less than 1 is interpreted as less likely than the reference category. In order to identify the most important determinants of contraceptive use, and tease out direct and indirect relationships, Model I only examined the relationships between contraceptive use and socio-demographic factors, Model II examined the relationship between contraceptive use and exposure to FP information variables, while Module III was on the relationship between contraceptive use and household decision making indicators. Model IV is the full model representation the relationship between contraceptive use and all predictors with the aim of identifying the most important predictors.

**Table 3: The Odds of Married Women Using Contraceptives by Predictors**

	Variable	Model I		Model IV	
		Odds	Sig.*	Odds	Sig.
1	<b>SOCIO-DEMOGRAPHIC</b>				
	Age of Respondents				
	15-19 (ref.)	1.00		1.00	
	20-24	2.91	.157	2.36	.437
	25-29	2.49	.232	1.08	.944
	30-34	3.14	.149	.841	.882
	35-39	4.34	.067	1.03	.982
	40+	4.31	.071	1.50	.736
2	<b>State of Residence</b>				
	Yobe	1.00		1.00	
	Borno	1.43	.464	1.97	.317
	Adamawa	1.95	.122	2.65	.106
	Taraba	4.60	.000	4.27	.017
	Gombe	4.02	.001	5.23	.008
	Bauchi	2.46	.036	7.54	.001
3	<b>Place of Residence</b>				
	Rural	1.00		1.00	
	Urban	1.30	.295	1.04	.921
4	<b>Women's Education</b>				
	No Education (ref.)	1.00		1.00	
	Primary	2.01	.003	1.57	.214
	Secondary/higher	2.38	.001	1.74	.176
5	<b>Religion</b>				
	Islam - Trad (ref.)	1.00		1.00	
	Christians	2.28	.000	1.93	.079
6	<b>Wealth Index</b>				
	Poorest (ref.)	1.00		1.00	
	Poorer	.801	.384	.924	.853
	Middle	1.31	.345	1.12	.812
	Richer	2.23	.015	1.28	.637
	Richest	4.28	.000	5.57	.006
7	<b>Number of Co-Wives</b>				
	No other wives (ref.)	1.00		1.00	
	One or more	1.01	.980	1.29	.403
8	<b>Type of Employment</b>				
	Not working (ref.)	1.00		1.00	
	Informal	1.75	.010	1.59	.195
	Formal	1.16	.514	1.28	.481
	<b>No of Living Children</b>				
	1 or 2/None (ref.)				
	3-4	1.00		1.00	
	5+	1.77	.024	3.18	.003
		3.61	.000	9.33	.000
	<b>Husband's Age</b>				
	34 or younger (ref.)	1.00		1.00	
	35-49	.800	.429	1.01	.980
	50 or older	.561	.101	.710	.533
	<b>Husband's Education</b>				
	No education (ref.)	1.00		1.00	
	Primary	1.76	.039	1.45	.387
	Secondary	1.09	.760	.778	.557
	Higher	2.29	.005	1.75	.208

Husband's employment Informal/Not working (ref.) Formal	1.00 1.38	.170	1.00 1.37	.372
Model I, Nagelkerke R <sup>2</sup> = .275 = 28%				
EXPOSURE TO FP INFORMATION	Model II		Model IV	
	Odds	Sig.	Odds	Sig.
Heard about FP on radio No (ref.) Yes	1.00 1.27	.395	1.00 1.53	.230
Heard about FP on TV No (ref.) Yes	1.00 1.83	.043	1.00 1.54	.257
At health facility told about FP No (ref.) Yes	1.00 4.91	.000	1.00 4.10	.000
Read about FP on poster No (ref.) Yes	1.00 1.39	.217	1.00 1.39	.298
Model II, Nagelkerke R <sup>2</sup> = .162 = 16%				
HOUSEHOLD DECISION MAKING	Model III		Model IV	
	Odds	Sig.	Odds	Sig.
Decision on health care Else (ref.) Joint decision	1.00 .661	.094	1.00 1.39	.381
Decision on large household purchases Else (ref.) Husband/partner alone	1.00 .434	.000	1.00 .571	.116
Decision on visit to family/relative Else (ref.) Husband/partner	1.00 1.20	.420	1.00 2.02	.041
Model IV, Nagelkerke R <sup>2</sup> = .380 = 38%				

\* = statistical significant levels i.e. .001, .01, .005

Logistics regression results in Model I, Table 3 showed that state of residence, respondent's educational level, religion, wealth status, type of employment, number of living children and husband's educational level had significant relationship with contraceptive use, and the odds were in the expected direction (explained variance = 28%). Results in Model II showed that indicators of exposure to FP information that had significant relationship with contraceptive use were; heard about FP on TV last few months before the survey and told about FP at health facility (explained variance = 16%). And when only household decision making variables were considered, the only significant factor was person who usually decides on large household purchases (explained variance = 3%).

In Model IV, all predictors of contraceptive use were factored into the equation to determine direct and indirect relationships. Results showed that only state of residence, wealth status, number of living children, and told about FP

at health facility had direct relationships with contraceptive use while wealth status was co-related with it. Predictors that had indirect relationships with contraceptive use were those that were significantly related in Models I, II, and III but were not significant in Model IV when all predictors were factored into the equation.

Model IV explained more variance (38%) in the relationship between contraceptive use and its determinants, including variables in the model and those not in the equation. Respondents in Bauchi state were over seven times more likely to use contraceptive than their counterparts in Yobe state, the reference category (P-value = .001). Respondents in Gombe state were five times more likely to use contraceptive than those in the reference category (P-value = .008), and respondents in Taraba state were four times more likely than the reference category to use contraceptive (P-value = .017). On wealth status, respondents in the richest category were over five times more likely than their counterpart in Yobe state to use contraceptive (p-value = .006).

Findings of this study showed that respondents who had more living children used contraceptive more than those who had none. Women who had five or more living children were nine times more likely than those who had none to use contraceptive (P-value = .000), and those who had three or four living children were three times more likely than those who had none to use contraceptive (P-value = .003).

With respect to exposure to FP information, results showed that respondents who reported that they had about FP at health facility were four times more likely to use contraceptive than their counterpart who did not ( $p = .000$ ). On household decision making, respondents were twice more likely to use contraceptive when husband/partner decided visit of respondent to family/relatives than the reference category (P-value = .041). This relationship was not significant in Model III when only household decision making variables were considered thus, suggesting that decision on visit to family/relative may be co-related with another variable in Model IV.

#### 4 DISCUSSION & CONCLUSION

Although evidence in the literature showed that socio-demographic factors [25,26], exposure to FP information [27], and household decision making factors [10,28] have strong relationship with contraceptive use, this study corroborates these evidence, and provides additional information on the factors that have direct or indirect relationships with contraceptive use. Thus, suggesting which independent factors should come first in prioritizing strategies for program intervention.

In order to increase contraceptive use among married women in the north-east region of Nigeria where its use is considerably low, it will be necessary for policy and programs to be more strategic by categorizing factors influencing use into primary and secondary based on the strength of evidence provided by this study. In order to increase uptake of contraceptive use, socio-demographic

factors that should be considered first are; state of residence, wealth status, and number of living children. It is not surprising to have state of residence as a key factor of contraceptive use considering the ethnic differences across the states and by implication cultural differences as well. Also, wealth status role in accessing contraceptives is obvious considering transportation and monetary cost of obtaining a contraceptive method [29,30], while number of living children is adjudged a paramount factor in contraceptive use especially in developing countries [31]. Other socio-demographic factors that may be considered secondary based on evidence from this study are, education, religion, type of employment, and husband's education.

Another primary factor important to contraceptive use in the north-east region is access to FP information at health facility. It seemed that women had more trust in information obtained from health facility as they would treatment or antenatal services from professionals usually doctors [32, 33]. This factor need to be considered along with the significant primary socio-demographic factors mentioned above for maximum effects.

Other variables that had indirect effects on contraceptive use and are thus, classified under secondary influence were; exposure to FP information on TV, and person who decides on large household purchases. A factor termed as co-directly related with contraceptive use was person who decides on visit to family/relative. This factor is perhaps, strengthened by another factor since it was not significant in the reduced Model III. Policy and programming that considers these predictors prioritizing into primary and secondary will increase contraceptive use in the region.

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