

Predictors of Unmet Need for Contraception among Urban and Rural Women in Anambra State, Nigeria: A Mixed Method Survey.

ABSTRACT

Aims: To assess the levels of unmet need for contraception and the various factors that influence these levels among rural and urban populations of currently married women of reproductive age in Anambra State, Nigeria.

Study design: Mixed method survey

Place and Duration of Study: Anambra State in South-Eastern Nigeria. The study was carried out from March 2017 to July 2017.

Methodology: The study participants were currently married women of reproductive age (15-49 years) who had resided in the Local Government Areas of interest for at least one year prior to the survey and who consented to the study. Excluded from the study were women who were homeless, living in institutional homes or were too sick to participate in the survey. Multistage sampling technique was used to select 208 urban and 210 rural participants and quantitative data obtained using pre-tested, semi-structured, interviewer-administered questionnaires. Qualitative data were obtained from focus group discussions (FGD) among current non-users of contraception and key informant interviews (KII) among Primary Health Care staff in selected Local Government Areas. Binary logistic regression was done for quantitative data analysis using SPSS software and content analysis of qualitative data was done using the Atlas.ti software.

Results: Response rate was 96.8%. There was a significantly higher level of awareness of at least 3 modern methods of contraception among urban (52.5%) compared to rural women (47.5%) ($P < 0.001$). The overall contraceptive prevalence among participants was 44.5% (29.7% for modern methods and 14.8% for traditional methods). The overall level of unmet need for contraception was very high (26.3%), but much higher was the unmet need for modern contraception (41%). The independent predictors of unmet need for contraception among urban women were health insurance and cost of contraceptives; while that among rural women was perceived the risk of pregnancy. Only 2 rural participants had a form of health insurance. The commonest reasons for contraceptive non-use were side effects-related for urban women and opposition to use for rural women.

Conclusion: The level of unmet need for contraception remains very high and its predictors vary between urban and rural women in Anambra State, Nigeria.

Keywords: Contraception, family planning, Unmet need, Determinants, Rural, Urban.

1. INTRODUCTION

According to the key findings of the fertility preferences chapter of the Nigeria Demographic and Health Survey (NDHS) 2013, overall, Nigerian women have about one child more than the number they want [1]. This implies that the total fertility rate of 5.5 is 15% higher than it would be if all unwanted births were avoided [1]. Unmet need for contraception is defined as the percentage of currently married women of reproductive age, who want to stop

childbearing (unmet need for limiting) or delay childbearing by at least 2years (unmet need for spacing), but are not using any method of contraception [1,2]. The total unmet need is a sum of the unmet need for spacing and unmet need for limiting [1,2].

At the 2012 London Summit on Family Planning, Nigeria committed to achieving the goal of a contraceptive prevalence rate (CPR) of 36% by 2018 [3]. Following the commitment, the Federal Ministry of Health developed a 5-year costed scale-up plan, intended to guide programming, resource allocation, and commitments to achieve the national goal [4]. However, despite the good policy environment, less than 45% of the target for unmet need for contraception was met by the end of the 2015 target year for the Millennium Development Goals (poor progress according to Nigeria MDG report 2015) [5].

According to World Health Statistics 2017, while nine out of 10 women in the WHO Western Pacific Region had their family planning need satisfied, only half of the women in the WHO African Region did [6]. Demographic and Health Survey Nigeria 2013, reported that the total unmet need for contraception in Nigeria was 16% (12% for spacing and 4% for limiting). The Contraceptive Prevalence Rate (CPR) for all methods was 15% (10% for modern methods and 5% for traditional methods) and was much higher in urban areas (26.8%) than rural areas (8.5%) [1]. Only about one-third of the potential demand for contraception was being met; thus if all married women who said they wanted to space or limit their children were to have used contraceptives, CPR would have increased to 31% [1].

The Population Reference Bureau reports that Nigeria is currently the 7th most populous country in the world with an estimated population of 182 million persons and it is projected that by the year 2050, Nigeria will be the 4th most populous country in the world, with an estimated population of 397 million persons [7]. This has grave social, economic and health implications for the already limited resources of the country. Also, the slow uptake of contraceptive methods has contributed to the high levels of unintended pregnancies, unsafe abortions, and maternal deaths. About a quarter of Nigeria's 9.2 million pregnancies in 2012, were unintended [8]. In spite of Nigeria's restrictive abortion laws, an estimated 1.25 million induced abortions occurred in 2012; with 31 abortions per 1000 women of reproductive age occurring in the South-Eastern part of the country [8]. Finally, according to World Health Statistics 2017, worldwide approximately 830 women died every single day due to complications during pregnancy or childbirth in 2015. Eight hundred and fourteen (814) maternal deaths per 100,000 live births occurred in Nigeria [6] (an increase of more than 40% from the NDHS 2013 report of 576/100,000 live births).

Thus, there remains an unfinished agenda to ensure that all people have access to comprehensive Sexual and Reproductive Health (SRH) services in the post-2015 period [9]. This is indicated in the outcome document of the United Nations Summit for the Adoption of the Post-2015 Development Agenda, by Goal 3 (targets 3.1 and 3.7) of the Sustainable Development Goals (SDG) [10]. Unmet need for contraception can be influenced unequally among different settings mainly due to the effect of socioeconomic and demographic variables; thus its predictors are area-specific [11]. Therefore, this study was done for an assessment of the level of unmet need for contraception and the pattern of its determinants among currently married women of reproductive age in the rural and urban areas of Anambra State, Nigeria. It is expected to form an evidence base for establishing informed policy priorities and efficient and equitable resource allocation.

2. METHODOLOGY

2.1 Study Area:

Anambra State is in the South-Eastern part of Nigeria. According to the 2006 Nigerian census, the state has a total population of 4,177,828 persons, comprising 2,117,984 males and 2,059,844 females. The land size of the state is 4,816.21km² [12]. In 2011, the state registered 110,282 live births, which represents a 28% increase in the 2009 value of 79,550 live births and a 46% increase in the 2010 value of 59,419 live births [13]. Currently, the State is the second most densely populated State in Nigeria, with a population density of 867.5 persons per km², a Total Fertility Rate of 4.2 per woman and an annual population growth rate of 2.2% per annum [14]. There are 21 Local Government Areas (LGAs) in the state. Christianity is the predominant religion and the predominant occupations are civil service and trade.

2.2 Study Design:

The study was a mixed method survey, community-based.

2.3 Study Population:

The study population comprised currently married women of reproductive age (15-49 years) who had resided in the LGA of interest for at least one year prior to the survey and who consented to participate in the study. Excluded from the study were women who were homeless, living in institutional homes or were too sick to participate in the survey.

2.4 Sample Size Calculation:

The minimum sample size to determine a difference in the level of unmet need between women dwelling in rural and urban areas of the state that was significant at 5% confidence level with a power of 90% was calculated using the formula for a comparison of two proportions [15]. The level of unmet need used for the calculation was 32.7% for rural women and 18.4% for urban women, as reported in a study of the unmet need for contraception among Ethiopian women carried out by Dejen et al [11]. The non-response rate of 10% was used; therefore a minimum sample of 432 respondents was used (216 from the rural LGAs and 216 from the urban LGAs).

2.5 Sampling Technique:

2.5.1 Quantitative Sampling Technique:

Multi-stage sampling technique was used for the sampling. In stage 1, stratified sampling with proportional allocation was used for the selection of LGAs to be studied. From information obtained from the National Population Commission, Awka, Anambra State, the state was stratified into 7 urban and 14 rural LGAs (giving a ratio of 1:2); therefore 2 urban and 4 rural LGAs were selected by simple random sampling (employing simple balloting) from the strata. Thus, Onitsha North and Nnewi North LGAs were selected in the urban stratum while Dunukofia, Anaocha, Aguata and Oyi LGAs were selected in the rural stratum.

The LGAs in the state are sub-divided into political wards; thus, in stage 2, simple random sampling (by simple balloting) was used to select 2 political wards from each of the selected rural and urban LGAs. The number of women studied in each ward was proportionally allocated, depending on the proportion of women of reproductive age in the ward (as obtained from the LGA 2017 projected population for each ward).

In each of the selected wards, a bottle was spun at the center of the cluster of houses and it was allowed to make at least 3 revolutions before stopping. The first house in the direction

the bottle neck was facing when it stopped spinning served as the starting point and households in the ward were selected consecutively till the sample size for the ward was achieved. One eligible woman was interviewed in each household. If there were two or more eligible women in a household, one of the women was selected by simple random sampling employing simple balloting. The interviews were conducted by trained research assistants after a written informed consent was obtained from each participant. Pre-tested, semi-structured, interviewer-administered questionnaires were used. A vernacular version of the questionnaire was also prepared for the uneducated respondents to reduce inter-observer variation in interpretation during the interview.

2.5.2 Qualitative Sampling Technique:

Four Focus Group Discussion sessions were conducted among 28 current non-users of contraceptives identified and recruited during the quantitative study. Participants were recruited purposively into the FGD sessions based on availability and willingness to participate in the sessions and were stratified based on location and age. Six key informant interviews were conducted among Primary Health Care staff in each of the selected rural and urban LGAs. The participants were, purposively selected based on availability and willingness to participate. The processes were clearly explained to participants, they were assured of confidentiality and their right to opt out at any point clearly stated. A written informed consent was obtained from each participant prior to the onset of the discussions/interviews.

2.6 Study Variables:

The conceptual framework for this study was adapted from the revised behavioral model of health services use developed by Ronald Andersen in 1995 [16]. The evaluated health status was the unmet need status (Yes or No) which was the dependent variable. The standard definition of unmet need for contraception as revised by Bradley et al [2], was applied in this study and women who were married were assumed to be sexually active [2]. The independent variables were the Predisposing factors, Enabling factors, Need factors and Health system factors.

Women's decision-making autonomy was measured using five decision-making domains, from which a composite variable was developed as described by Kisaakye [17]. Questions asked in the survey included; a) Who usually decides how to spend respondent's earnings? b) Who usually decides on respondent's health care? c) Who usually decides on large household purchases? d) Who usually decides on visits to family or relatives? e) Who usually decides what to do with money husband earns? To all of these questions, the responses are respondent, spouse/partner, respondent and spouse/partner jointly or someone else. It was inferred that if a woman has autonomy in these decisions, then she has autonomy in the child-bearing sphere as well [17].

2.7 Data Management:

Collected data were entered into SPSS version 20. Variables that were statistically significant using Chi-square test were subjected to binary logistic regression. Level of statistical significance was set at $P \leq .05$. Coding and content analysis of the FGD and KII transcripts were done using the Atlas.ti software version 8. The code-primary document cross-tabulation analysis was used [18] and quotes from the participants that best described some of the themes were stated verbatim.

3. RESULTS:

A total of 432 questionnaires were administered out of which 418 questionnaires were retrieved, (response rate of 96.8%). There were 208 urban and 210 rural respondents in the study.

3.1 Socio-demographic Characteristics:

Table 1 below shows that the mean age of the respondents was 34.7±7.5. The rural women were significantly younger than the urban women ($t = 5.944$, $P < 0.001$).

Table 1: Socio-demographic characteristics of respondents by location

	Urban (n=208)	Rural (210)	Total (418)	χ^2
Variable	n (%)	n (%)	n (%)	(P-value)
Age Category				
15 – 19	0 (0.0)	6 (100.0)	6 (100.0)	40.659 (0.000)*
20 – 24	4 (12.9)	27(87.1)	31 (100.0)	
25 – 29	28 (38.9)	44 (61.1)	72 (100.0)	
30 – 34	39 (44.3)	49 (55.7)	88 (100.0)	
35 – 39	62 (62.6)	37 (37.4)	99 (100.0)	
40 – 44	46 (63.0)	27 (37.0)	73 (100.0)	
45 – 49	29 (59.2)	20 (40.8)	49 (100.0)	
Total	208 (49.8)	210(50.2)	418(100.0)	
Mean age ± SD	36.8 ± 6.5	32.7 ± 7.9	34.7 ± 7.5	
Religion				
Roman Catholic	104 (44.4)	130 (55.6)	234 (100.0)	12.276 (0.015)*
Protestant	67 (63.2)	39 (36.8)	106 (100.0)	
Pentecostal	34 (50.0)	34 (50.0)	68 (100.0)	
Islam	2 (40.0)	3 (60.0)	5 (100.0)	
Traditional religion	1 (20.0)	4 (80.0)	5 (100.0)	
Total	208 (49.8)	210 (50.2)	418 (100.0)	
Educational Status				
No formal education	2 (100.0)	0 (0.0)	2 (100.0)	69.312 (0.000)*
Primary	17 (37.0)	29 (63.0)	46 (100.0)	
Secondary	67 (32.5)	139 (67.5)	206 (100.0)	
Tertiary	122 (74.4)	42(25.6)	164 (100.0)	
Total	208 (49.8)	210 (50.2)	418 (100.0)	
Occupation				
Civil servant/professional	97 (76.4)	30 (23.6)	127 (100.0)	64.443 (0.000)*
Farmer	0 (0.0)	14 (100.0)	14 (100.0)	
Self-employed	49 (40.2)	73 (59.8)	122 (100.0)	
Artisan	6 (75.0)	2 (25.0)	8 (100.0)	
Unemployed	17 (39.5)	26 (60.5)	43 (100.0)	
Trader/business woman	39 (37.5)	65 (62.5)	104 (100.0)	
Total	208 (49.8)	210 (50.2)	418 (100.0)	
Number of living children				
0	11 (42.3)	15 (57.7)	26 (100.0)	4.820 (0.185)
1 – 2	46 (46.5)	53 (53.5)	99 (100.0)	
3 – 4	102 (55.7)	81 (44.3)	183 (100.0)	
5 and above	49 (44.5)	61 (55.5)	110 (100.0)	
Total	208 (49.8)	210 (50.2)	418 (100.0)	

* Statistically significant ($P \leq 0.05$)

The number of urban women with tertiary education was significantly higher than rural women (74.4% versus 25.6% ; $P < 0.001$). The level of unemployment was significantly higher among rural women compared to urban women (60.5% versus 39.5% ; $P < 0.001$).

3.2 Contraceptive Awareness:

Table 2 below shows that the level of awareness of at least 3 modern methods of contraception was significantly higher among urban women (52.5%) compared to rural women (47.5%) ($P < 0.001$).

Table 2: Contraceptive awareness of respondents by location

Variable	Urban n (%)	Rural n (%)	Total n (%)	χ^2 (P-value)
Contraceptive awareness	(N = 208)	(N = 210)	(N = 418)	
Knows no method	2 (33.3)	4 (66.7)	6 (100.0)	21.235 (0.000)*
Knows only traditional methods	2 (100.0)	0 (0.0)	2 (100.0)	
Knows 1-2 modern methods	2 (8.0)	23 (92.0)	25 (100.0)	
Knows ≥ 3 modern methods	202 (52.5)	183 (47.5)	385 (100.0)	
Total	208 (49.8)	210 (50.2)	418 (100.0)	
Methods are known	(N = 206)	(N = 206)	(N = 412)	
Pills	185 (53.3)	162 (46.7)	347 (100.0)	
Lactational amenorrhea	152 (58.0)	110 (42.0)	262 (100.0)	
Injectables	173 (52.1)	159 (47.9)	332 (100.0)	
Emergency contraception	96 (52.5)	87 (47.5)	183 (100.0)	
Male Condom	201 (51.3)	192 (48.7)	392 (100.0)	
Female Condom	104 (54.2)	88 (45.8)	192 (100.0)	
Implants	169 (57.5)	125 (42.5)	294 (100.0)	
Intrauterine device	166 (55.9)	131 (44.1)	297 (100.0)	
Male sterilization	60 (69.8)	26 (30.2)	86 (100.0)	
Female sterilization	83 (63.8)	47 (36.2)	130 (100.0)	
Rhythm	196 (56.8)	149 (43.2)	345 (100.0)	
Withdrawal	190 (55.2)	154 (44.8)	344 (100.0)	
Source of Information	(N = 206)	(N = 206)	(N = 412)	
Health center	57 (32.0)	121 (68.0)	178 (100.0)	
Hospital	95 (58.3)	68 (41.7)	163 (100.0)	
Friends/relatives	58 (42.0)	80 (58.0)	138 (100.0)	
Mass media	175 (68.6)	80 (31.4)	255 (100.0)	
Religious gathering	11 (57.9)	8 (42.1)	19 (100.0)	
Others (books, workshop, lectures, August meeting)	30 (69.8)	13 (30.2)	43 (100.0)	

***Statistical significance ($P \leq 0.05$)**

The FGD also showed that participants were well aware of contraception, its methods, and its benefits - which they opined to include child health benefits, economic benefits, maternal health benefits and improved sexual intimacy.

"Family planning is good in that you do not have to be carrying a baby while backing another. It enables the children to grow to some extent before you have another baby. For

213 *example, if you want to have children every 2 years, family planning will help you* [A 35-
 214 year-old rural woman]

215

216 The concept of contraception was however shrouded in myths and misconceptions among
 217 both urban and rural FGD participants which included real and perceived side effects,
 218 infertility, maternal death, neonate born with the device in hand and increased promiscuity.

219 *“.....Some people say that in your next world you will not be able to have a child if you do
 220 family planning.....”* [A 34-year-old urban woman]

221 *“.....It causes them to be promiscuous and lack self-control in terms of meeting a man due to
 222 their belief that it will protect them; even if they have intercourse ten times with men, they will
 223 not get pregnant.....”* [A 35-year-old rural woman]

224

225 From the table above, it is also evident that overall among the participants, the less effective
 226 methods of contraception (male condom, rhythm, withdrawal, and pills) are more commonly
 227 known than the most effective methods (sterilization, IUD, implants, and injectables) [19].
 228 The least known methods among both groups of women were male and female sterilization.
 229 More rural women got their contraceptive information from health centers while more urban
 230 women got their contraceptive information from mass media.

231

232 Worthy of note also is the finding that some heads of facilities do not create awareness for
 233 artificial methods of contraception in their health centers because of their personal values.

234 This is as stated by 2 urban OICs.

235 *“Hope you know that there are some heads of facilities in health centers who said that it is
 236 against their faith, that they do not do artificial family planning, that it is only the natural ones
 237 that they will teach.”* [An urban OIC]

238

239 **3.3 Contraceptive Prevalence:**

240

241 **The overall contraceptive prevalence among the participants was 44.5% (29.7% for modern
 242 methods and 14.8% for traditional methods).**

243

244 **Table 3: Current contraceptive use of respondents by location.**

245

Variable	Urban n (%)	Rural n (%)	Total n (%)	χ^2 (P-value)
Contraceptive use	(N = 208)	(N = 210)	(N = 418)	
No method	110 (47.4)	122 (52.6)	232 (100.0)	
Traditional method only	36 (58.1)	26 (41.9)	62 (100.0)	
Modern method	62 (50.0)	62 (50.0)	124 (100.0)	2.224 (0.329)
Total	208 (49.8)	210 (50.2)	418 (100.0)	
Methods in Use	(N = 98)	(N = 88)	(N = 186)	
Pills	8 (50.0)	8 (50.0)	16 (100.0)	
Lactational amenorrhea	3 (16.7)	15 (83.3)	18 (100.0)	
Injectables	7 (46.7)	8 (53.3)	15 (100.0)	
Emergency contraception	1 (50.0)	1 (50.0)	2 (100.0)	
Male condom	28 (63.6)	16 (36.4)	44 (100.0)	
Female condom	0 (0.0)	1 (100.0)	1 (100.0)	
Implants	13 (50.0)	13 (50.0)	26 (100.0)	
Intrauterine device	6 (60.0)	4 (40.0)	10 (100.0)	
Male sterilization	0 (0.0)	0 (0.0)	0 (0.0)	
Female sterilization	1 (50.0)	1 (50.0)	1 (100.0)	
Rhythm	31 (59.6)	21 (40.4)	52 (100.0)	
Withdrawal	35 (64.8)	19 (35.2)	54 (100.0)	

246 ***Statistical significance ($P \leq 0.05$)**

The CPR among urban women was found to be 47.1% while that among rural women was 41.9%. However, this difference was not statistically significant ($p = 0.33$). The most commonly used methods of contraception among both groups of women were the least effective methods (rhythm, withdrawal and male condom)[19]; while the least commonly used methods were male sterilization, female sterilization, female condom and emergency contraception.

3.4 UNMET NEED FOR CONTRACEPTION:

The study revealed that the level of unmet need for contraception among urban women was 25% while that among rural women was 27.6%; however, this difference in unmet need between women in the two locations was not statistically significant ($P=0.054$).

Figure 1 below shows that out of the 418 study respondents, 55.5% were currently not using any contraceptive method, while 44.5% were currently using a contraceptive method - natural or artificial (Contraceptive Prevalence). Among the current non-users of contraception, 28.5% were pregnant/post-partum amenorrheic. Among the non-pregnant/post-partum amenorrheic respondents, 24.75 were infecund. Out of the 232 (55.5%) current non-users of contraception, 110 (26.3%) had an unmet need for contraception (13.4% for spacing and 12.9% for limiting).

From the study, 42.3% of urban and 40% of rural women had an unmet need for modern contraception. The total demand for contraception among urban and rural women was 72% and 69.5% respectively. Sixty-five percent (65.3%) and 60.3% of this demand were satisfied by any method among urban and rural women respectively while 54.4% of this demand was satisfied by only modern methods of contraception in each of the two groups of women.

The reasons for non-use of contraception was explored among the FGD participants and showed that majority of urban women gave side effect-related reasons for current non-use of contraception, followed by access-related reasons (lack of trained personnel and lack of funds). Majority of the rural women gave opposition to use (from the women themselves, their partners or their relatives) as their reason for current non-use followed by side effect-related and religious reasons for non-use.

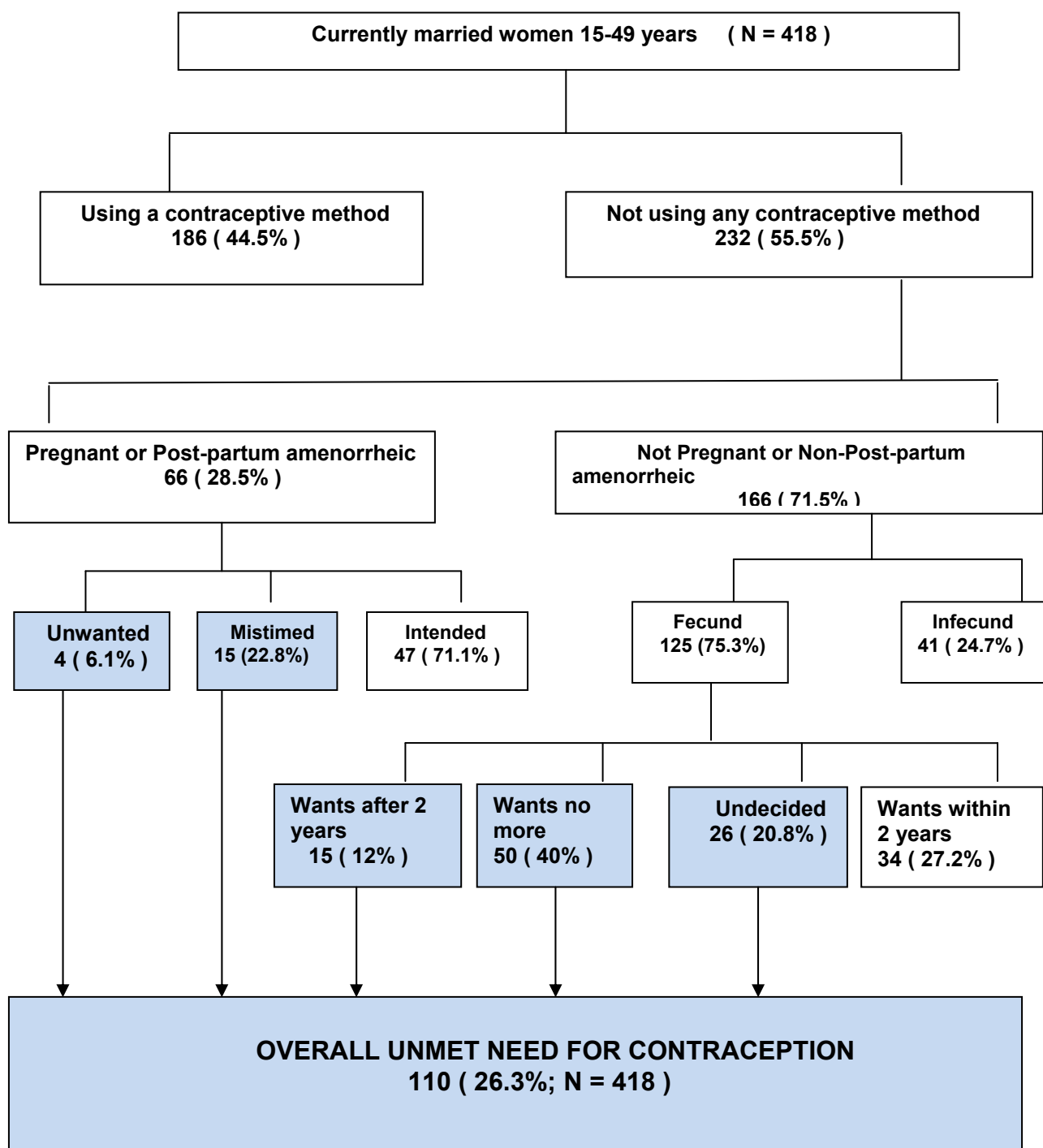
"I know of a woman that used to have 2 weeks menstrual flow instead of 4 days after she put it and when she removed it, she could not get pregnant again so it discouraged me. I do not want it. Even if I have 10 children, it does not matter." [A 35-year-old urban woman]
"My husband and I do not want it. As long as my body is ok, any number of children that come is ok". [A 35-year-old rural woman].

These are in keeping with the findings of the KII in which the commonest reasons for non-use identified by the urban OICs were side effect-related while that identified by the rural OICs was opposition to contraceptive use.

"The first and most important is that once it ceases a woman's period, she gets worried and cries out that all the bad blood is being stored in her body, that she will not use the method again. Even if you counsel her, she will refuse." [An urban OIC]

".....Some say that their husbands disapprove. For example, about 2-3 of them secretly come for it, saying their husbands do not approve but that they want it" [A rural OIC]

Figure 1: Flowchart for the overall unmet need for contraception among participants



Source: Bradley SK, Croft TN, Fishel JD, Westoff CF. Revising unmet need for family planning. DHS analytical studies no 25. Calverton Maryland: ICF International; 2012.

3.5 DETERMINANTS OF UNMET NEED FOR CONTRACEPTION:

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Table 4 below shows that a number of living children was a significant predictor of unmet need for contraception in both groups of women. The level of unmet need for contraception increased with increasing number of living children up to 3-4 living children. Educational status and employment status also predicted the unmet need for contraception in rural women only but not in their urban counterparts.

Table 4: Socio-demographic determinants of unmet need for contraception among urban and rural women.

Variables	UNMET NEED							
	URBAN (N = 208)				RURAL (N = 210)			
	n (%)		n (%)		n (%)		n (%)	
	No	Yes	Total	P-value	No	Yes	Total	P-value
SOCIO-DEMOGRAPHIC								
Age Category				0.914				0.745
15 - 19	0(0.0)	0 (0.0)	0 (0.0)		3 (50.0)	3 (50.0)	6 (100)	
20 - 24	3 (75.0)	1 (25.0)	4 (100)		19 (70.4)	8 (29.6)	27 (100)	
25 - 29	22 (78.6)	6 (21.4)	28 (100)		29 (65.9)	15(34.1)	44 (100)	
30 - 34	28 (71.8)	11(28.2)	39 (100)		37 (75.5)	12(24.5)	49 (100)	
35 - 39	44 (71.0)	18(29.0)	62 (100)		29 (78.4)	8 (21.6)	37(100)	
40 - 44	36 (78.3)	10(21.7)	46 (100)		20 (74.1)	7 (25.9)	27 (100)	
45 - 49	23 (79.3)	6 (20.7)	29 (100)		15 (75.0)	5 (25.0)	20 (100)	
Number of living children				0.002*				0.007*
0	11(100.0)	0 (0.0)	11(100)		15(100.0)	0 (0.0)	15(100)	
1-2	42(91.3)	4(8.7)	46(100)		43(81.1)	10(18.9)	53(100)	
3-4	72(70.6)	30(29.4)	102(100)		57(70.4)	24(29.6)	81(100)	
5 and above	31(63.3)	18(36.7)	49(100)		37(60.7)	24(39.3)	61(100)	
Highest educational status				0.405				0.007*
No formal education	1 (50.0)	1 (50.0)	2(100)		0 (0.0)	0 (0.0)	0(0.0)	
Primary	11(64.7)	6(35.3)	17(100)		15(51.7)	14(48.3)	29(100)	
Secondary	48(71.6)	19(28.4)	67(100)		101(72.7)	38(27.3)	139(100)	
Tertiary	96(78.7)	26(21.3)	122(100)		36(85.7)	6(14.3)	42(100)	
Employment status				0.523				0.036*
None	16(69.6)	7(30.4)	23(100)		38(62.3)	23(37.7)	61(100)	
Yes	140(75.7)	45(24.3)	185(100)		114(76.5)	35(23.5)	149(100)	

*Statistically significant ($P \leq 0.05$)

In table 5 below, unmet need for contraception was found to be significantly associated with the spousal communication ($P < 0.001$) and religion ($P = 0.02$) among urban women but not among rural women. Partner approval of contraception was significantly associated with unmet need in both groups of women ($P < 0.001$).

Table 5: Cultural factors that predict the unmet need for contraception

Variables	UNMET NEED							
	URBAN (N = 208)				RURAL (N = 210)			
	n (%)		n (%)		n (%)		n (%)	
	No	Yes	Total	P-value	No	Yes	Total	P-value
CULTURAL FACTORS								

Women autonomy				0.874				0.425
Low	17(77.3)	5(22.7)	22(100)		14(60.9)	9(39.1)	23(100)	
Medium	54(73.0)	20(27.0)	74(100)		56(73.7)	20(26.3)	76(100)	
High	85(75.9)	27(24.1)	112(100)		82(73.9)	29(26.1)	111(100)	
Women's approval of contraception				0.000*				0.048*
No	19(48.7)	20(51.3)	39(100)		28(60.9)	18(39.1)	46(100)	
Yes	137(81.1)	32(18.9)	169(100)		124(75.6)	40(24.4)	164(100)	
Spousal communication of contraception				0.000*				0.440
Never	45(59.2)	31(40.8)	76(100)		68(69.4)	30(30.6)	98(100)	
1-2 times	38(76.0)	12(24.0)	50(100)		25(69.4)	11(30.6)	36(100)	
≥ 3 times	73(89.0)	9(11.0)	82(100)		59(77.6)	17(22.4)	76(100)	
Perceived partner approval				0.000*				0.001*
No	46(59.0)	32(41.0)	78(100)		48(59.3)	33(40.7)	81(100)	
Yes	105(85.4)	18(14.6)	123(100)		97(82.2)	21(17.8)	118(100)	
I do not know	5(71.4)	2(28.6)	7(100)		7(63.6)	4(36.4)	11(100)	
Religion				0.015*				0.326
Roman catholic	80(76.9)	24(23.1)	104(100)		90(69.2)	40(30.8)	130(100)	
Protestant	55(82.1)	12(17.9)	67(100)		33(84.6)	6(15.4)	39(100)	
Pentecostal	19(55.9)	15(44.1)	34(100)		25(73.5)	9(26.5)	34(100)	
Islam	2(100.0)	0(0.0)	2(100)		2(66.7)	1(33.3)	3(100)	
Traditional religion	0(0.0)	1(100.0)	1(100)		2(50.0)	2(50.0)	4(100)	

371 *Statistically significant ($P \leq 0.05$)

372 Table 6 below shows the unmet need for contraception to be significantly associated with
373 having a form of health insurance among urban women ($P = 0.002$); while among rural
374 women, contraceptive knowledge, income category and perceived risk of pregnancy were
375 significantly associated with unmet need for contraception ($p < 0.05$)

376

377 **Table 6: Knowledge and information, enabling and need factors by location**

378

Variable:	UNMET NEED							
	URBAN (N = 208)				RURAL (N = 210)			
	n (%)				n (%)			
KNOWLEDGE AND INFORMATION	NO	YES	Total	P-value	NO	YES	Total	P-value
Contraceptive Knowledge				0.571				0.037*
Knows no method	2(100.0)	0(0.0)	2(100)		1(25.0)	3(75.0)	4(100)	
Knows only traditional	1(50.0)	1(50.0)	2(100)		0(0.0)	0(0.0)	0(0.0)	
Knows 1-2 modern method	2(100.0)	0(0.0)	2(100)		14(60.9)	9(39.1)	23(100)	
Knows ≥ 3 modern methods	151(74.8)	51(25.2)	202(100)		137(74.9)	46(25.1)	183(100)	
Total	156(75.0)	52(25.0)	208(100)		152(72.4)	58 (27.6)	210(100)	
Mass Media Message				0.348				0.064
No	19(67.9)	9(32.1)	28(100)		70(66.7)	35(33.3)	105(100)	
Yes	137(76.1)	43(23.9)	180(100)		82(78.1)	23(21.9)	105(100)	

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Total	156(75.0)	52(25.0)	208(100)		152(72.4)	58 (27.6)	210(100)
ENABLING FACTORS:							
Income Category				0.930			0.013*
NO - < N5000	25(73.5)	9(26.5)	34(100)		59(64.8)	32(35.2)	91(100)
N5000 – N24,999	42(72.4)	16(27.6)	58(100)		58(71.6)	23(28.4)	81(100)
N25000 – N44,999	54(77.1)	16(22.9)	70(100)		26(96.3)	1(3.7)	27(100)
≥ N45,000	35(76.1)	11(23.9)	46(100)		9(81.8)	2(18.2)	11(100)
Total	156(75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)
Health Insurance				0.002*			0.380
No	112(70.0)	48(30.0)	160(100)		150(72.1)	58(27.9)	208(100)
Yes	44(91.7)	4(8.3)	48(100)		2(100.0)	0(0.0)	2(100)
Total	156(75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)
NEED FACTORS							
Perceived risk of pregnancy				0.795			0.005*
No risk	71(76.3)	22(23.7)	93(100)		73(84.9)	13(15.1)	86(100)
Low risk	27(75.0)	9(25.0)	36(100)		33(68.8)	15(31.2)	48(100)
High risk	22(81.5)	5(18.5)	27(100)		19(52.8)	17(47.2)	36(100)
I do not know	17(70.8)	7(29.2)	24(100)		8(61.5)	5(38.5)	13(100)
Currently pregnant	19(67.9)	9(32.1)	28(100)		19(70.4)	8(29.6)	27(100)
Total	156(75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)

*Statistically significant ($P \leq 0.05$)

Worthy of note however, is the finding that only 2 rural women had a form of health insurance and all the rural women who had an unmet need for contraception had no form of health insurance; while majority of the urban women who had a form of health insurance had no unmet need for contraception ($P = 0.002$).

Table 7 below shows that in both urban and rural women, highest unit cost of contraceptive in the preceding 12 months, perceived contraceptive effectiveness and perceived contraceptive side effects were found to be significantly associated with unmet need for contraception; while perceived contraceptive availability was found to be significantly associated with unmet need for contraception among urban women alone but not among rural women ($p < 0.05$).

Table 7: Health system factors that predict the unmet need for contraception

Variable:	URBAN (N = 208)				RURAL (N = 210)			
	NO	YES	Total	P-value	NO	YES	Total	P-value
Health System Factors								
Distance from source				0.905				0.477
< 15 mins	52(73.2)	19(26.8)	71(100)		55(75.3)	18(24.7)	73(100)	
15 – 30 mins	98(76.0)	31(24.0)	129(100)		61(73.5)	22(26.5)	83(100)	
> 30 mins	5(71.4)	2(28.6)	7(100)		27(71.1)	11(28.9)	38(100)	
I do not know	1(100.0)	0(0)	1(100)		9(56.3)	7(43.8)	16(100)	
Total	156 (75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)	
Counseled by a health worker				0.842				0.925
No	32(76.2)	10(23.8)	42(100)		35(72.9)	13(27.1)	48(100)	
Yes	124(74.7)	42(25.3)	166(100)		117(72.2)	45(27.8)	162(100)	
Total	156 (75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)	
Cost of transport				0.419				0.056

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< ₦50	20(87.0)	3(13.0)	23(100)		58(74.4)	20(25.6)	78(100)	
₦50 – ₦100	123(74.1)	43(25.9)	166(100)		60(70.6)	25(29.4)	85(100)	
₦ > 100	12(66.7)	6(33.3)	18(100)		25(86.2)	4(13.8)	29(100)	
I do not know	1(100.0)	0(0.0)	1(100)		9(50.0)	9(50.0)	18(100)	
Total	156 (75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)	
Highest unit cost				0.000*				0.002*
None	97(66.0)	50(34.0)	147(100)		92(64.3)	51(35.7)	143(100)	
≤ ₦100	12(92.3)	1(7.7)	13(100)		20(87.0)	3(13.0)	23(100)	
₦ 101 – ₦ 500	47(97.9)	1(2.1)	48(100)		39(90.7)	4(9.3)	43(100)	
> ₦500	0 (0.0)	0 (0.0)	0 (0.0)		1(100.0)	0 (0.0)	1(100)	
Total	156 (75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)	
Perceived availability				0.040*				0.463
Not available	2 (100.0)	0 (0.0)	2(100)		1 (100.0)	0 (0.0)	1(100)	
Not readily available	14(93.3)	1 (6.7)	15(100)		18(64.3)	10(35.7)	28(100)	
Readily available	128(75.7)	41(24.3)	169(100)		97(75.8)	31(24.2)	128(100)	
I do not know	12(54.5)	10(45.5)	22(100)		36(67.9)	17(32.1)	53(100)	
Total	156 (75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)	
Perceived effectiveness				0.000*				0.000*
Ineffective	9 (90.0)	1 (10.0)	10(100)		5 (83.3)	1 (16.7)	6(100)	
Effective	115(83.3)	23(16.7)	138(100)		107(82.3)	23(17.7)	130(100)	
I do not know	32(53.3)	28(46.7)	60(100)		40(54.1)	34(45.9)	74(100)	
Total	156 (75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)	
Perceived side effects				0.000*				0.003*
None	59(93.7)	4(6.3)	63(100)		39(81.3)	9(18.8)	48(100)	
Mild-moderate	48(80.0)	12(20.0)	60(100)		63(81.8)	14(18.2)	77(100)	
Severe	12(66.7)	6(33.3)	18(100)		9(50.0)	9(50.0)	18(100)	
I do not know	37(55.2)	30(44.8)	67(100)		41(61.2)	26(38.8)	67(100)	
Total	156 (75.0)	52(25.0)	208(100)		152(72.4)	58(27.6)	210(100)	

*Statistically significant ($P \leq 0.05$)

Table 8 below shows women who had no form of health insurance were 4.7 times more likely to have an unmet need for contraception than those who did ($P = 0.01$); and those who had not purchased contraceptives in the 12 months preceding the study were 24 times more likely to have unmet need for contraception than those who had spent between N101-N500 to purchase one unit of contraceptive in the preceding 12 months ($P=0.03$).

Table 8: Crude and adjusted odds ratio for predictors of unmet need for contraception among urban women.

Variables	TOTAL UNMET NEED		Overall P-value for AOR
	COR (95% CI)	AOR (95% CI)	
Women approval			0.423
No	4.507(2.158 – 9.412)*	1.506(0.554 – 4.097)	
Yes (reference)			
Spousal communication			0.873
Never	5.588(2.437 – 12.813)*	1.336(0.415 – 4.306)	
1/2 times	2.561(0.992 – 6.617)	1.101(0.354 – 3.420)	
≥ 3 times (reference)			
Partner approval			0.857
No (reference)			
Yes	0.246(0.126 – 0.483)*	0.869(0.303 – 2.490)	
I do not know	0.575(0.105 – 3.150)	1.656(0.186 – 14.758)	

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Health insurance			0.011*
No	4.714(1.604 – 13.854)*	4.722(1.438 – 15.512)*	
Yes (reference)			
Highest unit cost			0.029*
None	24.227(3.247 – 180.791)*	15.714(1.943 – 127.093)*	
≤ ₦100	3.917(0.228 – 67.263)	6.569(0.341 – 126.452)	
₦101 – ₦500 (reference)			
Perceived effectiveness			0.491
Ineffective	0.127(0.015 – 1.066)	0.242(0.023 – 2.501)	
Effective	0.229(0.116 – 0.450)*	0.856(0.294 – 2.497)	
I do not know (reference)			
Perceived side effects			0.056
None (reference)			
Mild-moderate	3.687(1.117 – 12.170)*	4.863(1.357 – 17.423)*	
Severe	7.375(1.802 – 30.183)*	4.083(0.869 – 19.179)	
I do not know	11.959(3.897 – 36.702)*	6.030(1.474 – 24.660)*	

***Statistically significant ($P \leq 0.05$)**

Note: reference category for the dependent variable is “No unmet need”

After adjusting for potential confounders in the logistic model, having a form of health insurance ($P=0.01$) and highest unit cost of contraceptives ($P=0.03$) were found to independently predict the unmet need for contraception among urban women. Worthy of note also is the finding that after adjustment, religion ceases to be significantly associated with unmet need for contraception among urban women.

Table 9 below shows that the odds of having an unmet need for contraception significantly decreased with increasing educational status among rural women ($P=0.003$); and women who had no form of employment in the preceding 12 months of the study were found to be twice more likely to have an unmet need for contraception than those who had some form of employment ($P=0.04$).

Table 9: Crude and adjusted odds ratio for predictors of unmet need for contraception among rural women.

Variables	TOTAL UNMET NEED		Overall P-value for AOR
	COR (95% CI)	AOR (95% CI)	
Educational status			0.097
Primary (reference)			
Secondary	0.403(0.178 – 0.914)*	0.421(0.148 – 1.198)	
Tertiary	0.179(0.058 – 0.553)*	0.227(0.058 – 0.889)*	
Employment status			0.270
None	1.97(1.038 – 3.745)*	1.559(0.708 – 3.430)	
Yes (reference)			
Partner approval			0.245
No (reference)			
Yes	0.315(0.165 – 0.602)*	0.501(0.216 – 1.159)	
I do not know	0.831(0.225 – 3.068)	0.530(0.101 – 2.781)	
Risk of pregnancy			0.018*
No risk (reference)			
Low risk	2.552(1.092 – 5.965)*	3.138(1.154 – 8.535)*	
High risk	5.024(2.082 – 12.126)*	6.076(2.105 – 17.535)*	

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I do not know	3.510(0.992 – 12.417)	2.622(0.619 – 11.098)	
Currently pregnant	2.364(0.857 – 6.525)	2.162(0.672 – 6.959)	
Cost of contraceptive			0.179
None (reference)			
≤ ₦100	0.271(0.077 – 0.955)*	0.285(0.065 – 1.256)	
₦101 – ₦500	0.185(0.063 – 0.547)*	0.322(0.091 – 1.148)	
Perceived effectiveness			0.167
I do not know (reference)			
Ineffective	0.235(0.026 – 2.113)	0.783(0.066 – 9.229)	
Effective	0.253(0.133 – 0.480)*	2.212(0.173 – 28.239)	
Perceived side effects			0.116
None (reference)			
Mild-moderate	0.963(0.381 – 2.435)	0.416(0.138 – 1.250)	
Severe	4.333(1.339 – 14.022)*	1.184(0.263 – 5.334)	
I do not know	2.748(1.145 – 6.596)*	0.330(0.086 – 1.266)	

***Statistically significant ($P \leq 0.05$)**

Note: reference category for the dependent variable is “No unmet need”

After adjusting for potential confounders, perceived risk of pregnancy was found to be an independent predictor of unmet need for contraception among rural women.

Some of the findings in table 8 and 9 above correspond to the results of the FGD which showed that majority of both urban and rural women who are current non-users of contraception have unsupportive partners and relatives.

“My husband, mother, and mother-in-law are not in support at all because they said the disadvantages are too much both in the natural and artificial methods. They do not support anyone at all and it has discouraged me from using anyone” [A 35-year-old rural woman]

Although the FGD revealed that majority of both urban and rural women had not heard about health insurance and had no idea what the concept is, following a brief explanation, a few urban non-users expressed absolute disinterest in the scheme. However, the majority of both urban and rural participants agreed that where such a scheme exists, it will encourage women to use contraceptive services/commodities.

“It will encourage a woman to use contraceptives because she can get it and it will be paid for even if she does not have the money at a particular time when she wants to renew the method she is using”. [A 28-year-old rural woman]

4. DISCUSSION

The rural women were significantly younger than the urban women and this difference was remarkable in the 15-24 years age category. This could be explained by the relatively later age of marriage of urban women as reported by the Nigeria DHS [1]. Although much more needs to be done, the CPR for modern methods in the state was found to be higher than that recorded in the 2013 Nigeria DHS. This shows that more women in the state are adopting modern contraceptive methods unlike in previous years when traditional methods were preferred. These gains in CPR could be as a result of increased efforts and effectiveness of family planning programmes in the state and the deteriorating economic situation of many families in our society today, which forces many couples to seek more effective ways of limiting and spacing child birth.

Worthy of note is the KII finding that some facility heads discourage use of modern contraceptives in their facilities. This implies that women that access such facilities for health

care, who ordinarily would have opted for artificial methods of contraception are denied the opportunity; thus introducing provider bias into the system and narrowing the contraceptive method mix [20]. Such facility heads should thus be re-oriented by contraceptive programme managers, in order to achieve value change in them; however, if this proves abortive, they should be replaced or paired with a second facility head who would encourage and offer artificial contraceptive methods to clients.

Male and female sterilization was the least used methods among both urban and rural women. Some studies among Nigerian men have also shown a low level of awareness of vasectomy and low intention to adopt it as a contraceptive method [21-23]; as it is viewed by some men as castration [22]. Therefore men and women who have successfully adopted these methods of contraception can be identified to serve as male motivators and mentor mothers to other people, demystify the permanent contraceptive methods and dispelling myths around them.

Health insurance and the highest unit cost of contraception were found to be independent predictors of unmet need for contraception among urban women. This could be because having a form of health insurance implies that women have more access to contraceptive information and education which is included in the benefits package for most of the social health insurance programmes (SHIPs) [24]. This association has also been demonstrated by similar studies. [25-27] Therefore, the government should consider including long-acting reversible and permanent methods of contraception in the benefit package of the SHIPs and intensify efforts towards demand creation for the various forms of the SHIPs in both urban and rural areas; encouraging and supporting state and local government buy-ins and enrolment of the informal sector and vulnerable groups into the scheme.

Despite the efforts of the Federal Ministry of Health, Department for International Development and other International agencies to eliminate cost as a barrier to contraceptive use through the free contraceptive policy [28,29], user fees paid by women in public health facilities for the logistics and consumables, remain an economic barrier to contraception. Government and programme managers should thus strive to make provision for these so as to overcome the barrier. Community health workers should also be trained (by qualified family planning providers) on the provision of some of the long-acting reversible contraceptive methods in Primary Health Centres, in order to improve access to these more effective modern methods.

The study showed that the higher the risk perception, the higher the odds of having an unmet need for contraception; but this differs from that of other studies done in Cairo and the States [30,31], in which the women with unmet need for contraception had low perceived risk of pregnancy. This contrast in findings implies that the rural women in Anambra State are well aware of their risk of pregnancy (unlike the women in the latter studies), but their non-use of contraceptives stems most importantly from opposition to using (among other factors) as shown by the FGD and KII findings. Therefore more spousal and family support for contraception needs to be promoted in the communities.

5. CONCLUSION

This study has elucidated the fact that although there is high awareness of the various methods of contraception, there persists a knowledge-use gap in the practice of the more effective modern contraceptive methods, which if promptly, properly and differentially addressed in the 2 sub-populations of women of reproductive age, promises to control the

explosive population growth and its consequences on the limited resources of the country, while improving maternal and child health.

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COMPETING INTERESTS

Authors have declared that no competing interests exist. No funding was received towards the conduct and completion of this research work.

ETHICAL APPROVAL

Ethical approval for this study was obtained from the ethics committee of Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State.

REFERENCES

1. National Population Commission (NPC) and ICF International. Nigeria Demographic and health survey 2013. Abuja and Maryland: NPC and ICF International; 2014. Accessed 6 October 2015. Available: <https://dhsprogram.com/pubs/pdf/FR293/FR293.pdf>
2. Bradley S, Croft T, Fishel J, Westhoff C. Revising unmet need for family planning. DHS analytical studies no 25. Calverton Maryland: ICF international; 2012. Accessed 25 September 2015. Available: <https://dhsprogram.com/pubs/pdf/AS25/AS25%B12June2012%5D.pdf>
3. UKAID/Bill and Melinda Gates Foundation. London summit on family planning: summaries of commitments. 2013. Accessed 7 April 2016. Available: www.familyplanning2020.org/entities/61
4. Federal Ministry of Health. Nigeria family planning blueprint (scale-up plan). October 2014. Accessed 15 October 2015. Available: https://www.healthpolicyproject.com/ns/docs/CIP_Nigeria.pdf
5. OSAP-Millennium Development Goal. Nigeria 2015 millennium development goal end-point report: Abridged version. Abuja 2015. Accessed 28 October 2015. Available: <https://planipolis.iiep.unesco.org/en/2015/millennium-development-goals-end-point-report-2015-nigeria-6229>
6. World Health Organization. World health statistics 2017: monitoring health for the SDGs. WHO. 2017. Accessed 28 January 2018. Available: www.who.int/gho/publications/world_health_statistics/en/
7. Population Reference Bureau. 2015 World population data sheet with a focus on women's empowerment. August 2015. Accessed 8 January 2016. Available: www.prb.org/pdf15/2015-world-population-data-sheet_eng.pdf
8. Guttmacher Institute. Factsheet: Abortion in Nigeria. Accessed 8 November 2015. Available: www.guttmacher.org/pubs/FB-Nigeria.html
9. United Nations. The Millenium Development Goals Report 2015. Accessed 15 January 2016. Available: [www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20\(July%201\).pdf](http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf)

- 565 10. The General Assembly. Transforming our world: The 2030 agenda for sustainable
566 development. United Nations. 2015. Accessed 18 December 2015. Available:
567 www.un.org/sustainabledevelopment/sustainable-development-goals/ .
- 568 11. Dejan G, Ayichiluhm M, Abajobir A. Prevalence and associated factors of unmet
569 need for family planning among married women in Enemy district, Northwest
570 Ethiopia: A comparative cross-sectional study. Glob J Med Res Interdiscip. 2013.
571 Accessed 9 December 2015. Available:
572 www.medicalresearchjournal.org/index.php/GJMR/article/view/361.
- 573 12. National Population Commission (NPC). 2006 population and housing census:
574 population distribution by sex, state, Local Government Area and senatorial
575 district. Abuja: National Population Commission; 2010. Accessed 18 January 2016.
576 Available: www.ibenaija.org/uploads/1/0/1/2/10128027/priority_table_vol_4.pdf
- 577 13. National Bureau of Statistics [Nigeria]. Annual abstract of statistics 2012. Accessed
578 11 October 2017.
579 Available: www.nigerianstat.gov.ng/pdfuploads/annual_abstract_2012.pdf
- 580 14. The government of Anambra State. History of Anambra. 2017. Accessed 11
581 October 2017. Available: www.anambrastate.gov.ng/history
- 582 15. Kirkwood BR, Sterne JA. Essential medical statistics. 2nd ed. Massachusetts:
583 Blackwell Science; 2003. p. 420
- 584 16. Andersen R. Revisiting the behavioral model and access to medical care: does it
585 matter? J Health Soc Behav. 1995; 36 (1): 1-10.
- 586 17. Kisaakye P. Determinants of unmet need for contraception to space and limit births
587 among various groups of currently married women in Uganda. Ist Annual
588 International Interdisciplinary Conference; 24-26 April, Azores, Portugal: AIIC;
589 2013. p. 822-831. Accessed 18 September 2015. Available:
590 <https://eujournal.org/index.php/esj/article/view/1402>
- 591 18. Fries S. Atlas.ti 7 user guide and reference. Berlin: ATLAS.ti Scientific Software
592 Development GmbH; 2015. P. 276-280.
- 593 19. Steiner MJ, Dalebout S, Condon S, Dominik R, Trussell J. Understanding risk: A
594 randomized control trial of communicating contraceptive effectiveness. Obstet
595 Gynecol. 2003; 102: 709 - 717.
- 596 20. MEASURE Evaluation. Method mix. Accessed 3 June 2017. Available:
597 https://www.measureevaluation.org/prh/rh_indicators/specific/fp/method-mix.
- 598 21. Adenuga M, Bolaji A, Ademola C. Awareness of married men on vasectomy and its
599 adoption in typical indigenous Nigerian communities. Afr. J. Nurs. Midwifery. 2016;
600 4(5): 631-638.
- 601 22. Ezegwui H, Enwereji J. Attitude of men in Nigeria to vasectomy. Int. Health. 2009;
602 1(2): 169-172.
- 603 23. Akpamu u, Nwoke E, Osifo U, Igbinovia E, Adisa A. Knowledge and acceptance of
604 vasectomy as a method of contraception amongst literate married men in Ekpoma,
605 Nigeria. Afr. J. Biomed. Res. 2010; 13: 153-156.
- 606 24. National Health Insurance Scheme. National Health Insurance Scheme operational
607 guidelines 2005. Accessed 20 June 2017
608 Available: <https://www.nhis.gov.ng/downloadable-documents/#.WTMJslcmXFA> .
- 609 25. Culwell K, Feinglass J. The association of health insurance with use of prescription
610 contraceptives. Perspect Sex Reprod Health. 2007; 39(4): 226-230.
- 611 26. Nearn J. Health insurance coverage and prescription contraceptive use among
612 young women at risk for unintended pregnancy. Contraception. 2009; 79(2): 105-
613 110.
- 614 27. Dworsky A, Ahrens K, Courtney M. Health insurance coverage and use of family
615 planning services among current and former foster youth: implications of the health
616 care reform law. J Health Polit Policy Law. 2013; 38(2). Doi: 10.1215/03616878-
617 1966360.

- 618 28. Bock A, Tien M, Igharo E, Adedeji O, Agudelo J. Nigeria: contraceptive logistic
619 management system assessment report. Arlington: USAID/DELIVER PROJECT,
620 Task Order 4. 2011. Accessed 12 April 2016. Available:
621 [https://www.researchgate.net/profile/Olanike_Adedeji/publication/277270961_Con](https://www.researchgate.net/profile/Olanike_Adedeji/publication/277270961_Contraceptives_Logistics_Management_System_CLMS_Assessment_in_Nigeria_in_12_selected_States_by_Federal_Ministry_of_Health_October_2012/links/56b3429508aed7ba3f5ad/Contraceptives-Logistics-Management-System-CLMS-Assessment-in-Nigeria-in-12-selected-States-by-Federal-Ministry-of-Health-October-2012.pdf)
622 [traceptives_Logistics_Management_System_CLMS_Assessment_in_Nigeria_in_12](https://www.researchgate.net/profile/Olanike_Adedeji/publication/277270961_Contraceptives_Logistics_Management_System_CLMS_Assessment_in_Nigeria_in_12_selected_States_by_Federal_Ministry_of_Health_October_2012/links/56b3429508aed7ba3f5ad/Contraceptives-Logistics-Management-System-CLMS-Assessment-in-Nigeria-in-12-selected-States-by-Federal-Ministry-of-Health-October-2012.pdf)
623 [_selected_States_by_Federal_Ministry_of_Health_October_2012/links/56b342950](https://www.researchgate.net/profile/Olanike_Adedeji/publication/277270961_Contraceptives_Logistics_Management_System_CLMS_Assessment_in_Nigeria_in_12_selected_States_by_Federal_Ministry_of_Health_October_2012/links/56b3429508aed7ba3f5ad/Contraceptives-Logistics-Management-System-CLMS-Assessment-in-Nigeria-in-12-selected-States-by-Federal-Ministry-of-Health-October-2012.pdf)
624 [8aed7ba3f5ad/Contraceptives-Logistics-Management-System-CLMS-](https://www.researchgate.net/profile/Olanike_Adedeji/publication/277270961_Contraceptives_Logistics_Management_System_CLMS_Assessment_in_Nigeria_in_12_selected_States_by_Federal_Ministry_of_Health_October_2012/links/56b3429508aed7ba3f5ad/Contraceptives-Logistics-Management-System-CLMS-Assessment-in-Nigeria-in-12-selected-States-by-Federal-Ministry-of-Health-October-2012.pdf)
625 [Assessment-in-Nigeria-in-12-selected-States-by-Federal-Ministry-of-Health-](https://www.researchgate.net/profile/Olanike_Adedeji/publication/277270961_Contraceptives_Logistics_Management_System_CLMS_Assessment_in_Nigeria_in_12_selected_States_by_Federal_Ministry_of_Health_October_2012/links/56b3429508aed7ba3f5ad/Contraceptives-Logistics-Management-System-CLMS-Assessment-in-Nigeria-in-12-selected-States-by-Federal-Ministry-of-Health-October-2012.pdf)
626 [October-2012.pdf](https://www.researchgate.net/profile/Olanike_Adedeji/publication/277270961_Contraceptives_Logistics_Management_System_CLMS_Assessment_in_Nigeria_in_12_selected_States_by_Federal_Ministry_of_Health_October_2012/links/56b3429508aed7ba3f5ad/Contraceptives-Logistics-Management-System-CLMS-Assessment-in-Nigeria-in-12-selected-States-by-Federal-Ministry-of-Health-October-2012.pdf)
627 29. Department for International Development [DFID Nigeria]. Scaling up access to
628 contraceptive commodities in Nigeria. Human development team. 2011. Accessed
629 20 June 2017. Available: https://iati.dfid.gov.uk/iati_documents/3716678.odt
630 30. Sultan M, Bakr I, Ismail A, Arafa N. Prevalence of unmet contraceptive need
631 among Egyptian women: a community-based study. J Prev Med Hyg. 2010; 51:
632 62-66.
633 31. Jones R, Frohwirth L, Moore A. Beyond poverty: exposure to disruptive events
634 among women having abortions. J Fam Plann Reprod Health Care. 2013; 39: 36-
635 43. G

636