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Intimate Partner Violence and Infertility Among Currently Married Women in Nigeria

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Abstract - *Marital satisfaction and happiness is a mirage without childbearing in a typical African society. Due to acclaimed impact of stress and psychological disorder of intimate partner violence (IPV) on women's sexual and reproductive health this study examined the relationship between IPV and infertility experience among currently married women in Nigeria. 19,655 eligible currently married women who had been living with partner/spouse for at least two years preceding the survey were selected from a total 38,948 respondents of 2013 Nigeria Demographic and Health Survey for the present study. Descriptive bivariate and a three model binary logistic regression were used to examine net impact of female genital mutilation/cutting on infertility experience in Nigeria. The findings showed that prevalence of infertility was relatively low (3.1%) among the currently married women who were living with their partners in the last two years preceding the survey among which the study revealed that 83% and 16% respondents experienced primary and secondary infertility respectively. Though, the study revealed a significant relationship between ever experienced intimate partner violence and fertility status of currently married women but IPV was negatively correlated with infertility experience among currently married women in Nigeria. The study concluded that prevalence of infertility was relatively low among the currently married women who were living with their partners in the last two years preceding the survey. Though, the study revealed a significant relationship between ever experienced intimate partner violence and fertility status of currently married women but IPV was negatively correlated with infertility experience among currently married women in Nigeria.*

Keywords: *Infertility, Partner violence, Conception, Child bearing, Nigeria*

INTRODUCTION

The joy of child bearing in marriage is a prayer and desire of all couples in typical African societies where children are regarded as the essential purpose of marital union. In most African societies, marital satisfaction is incomplete without child bearing [1]-[4]. Life could be almost miserable and unbearable for any "unfruitful" woman in an average African society [5]. So, "unfruitful" marital union which is characterized by involuntary childlessness is a major reproductive and public health issue with various psychological and social implications for couples [6]-[9]. Despite the on-going concerted efforts to lowering fertility in most sub-Sahara African countries particularly in Nigeria, the fact remains that many other African couples, women in particular are still frantically aching to be mothers [10] by looking for "fruit of the womb" even if it is going to be only one child [11]. Infertility, which is usually classified into two (primary and secondary) is operationally defined by World Health Organization (WHO) as the inability of couples to achieve conception despite frequent, unprotected sexual intercourse for at least one year duration or carry a pregnancy to the delivery of a live baby respectively [12]-[14]. More than 70 million couples which constitute average of 15% or one in every seven of reproductive aged couples are estimated to be suffering from the incidence of infertility worldwide [15]-17. Of this category of couples, close to 9% are found in developing countries and over 20% of this total domicile in Nigeria [15],[17],[18]. Though this sexual and reproductive dysfunction has to do with couple, having men and women accounting for almost the same proportion of the reproductive abnormalities and inadequacies[16],[19]-[21]0 but most often than not, women in such union bear the sole blame, brunt and continual grief [10]-[22]-[26] and often face public

stigmatization, pressure and embarrassment to either bring forth children or face horrible marital and general devastating life experiences [3],[22],[27]-[29]. This study therefore, attempts to examine intimate partner violence and infertility among currently married women in Nigeria.

In spite of all efforts to curtail menace of involuntary infertility, clinic and other records still show a rise in infertility incidence and prevalence in Nigeria [30]-[31], to the extent that infertility has been observed as the leading cause of specialist gynaecological consultations in Nigeria [32]-[33]. Though the causes and risk factors of infertility vary around the world according to the geographical location and socio-economic conditions [9] but while many empirical socio-medical, biosocial and clinical evidences [21],[34]-[36] suggested tubal, uterine, ovarian and cervical factors, infections, environmental, genetic, dietary and other patterns of lifestyle as the likely significant predictors of the reproductive dysfunction, little is known about the effect of intimate partner violence (IPV) on infertility despite the acclaimed impact of stress and psychological disorder of IPV on women's sexual and reproductive health [37]-[45]. Though the role of stress in infertility remains controversial [43] but elevated stress levels have been associated with infertility [37], [38],[46]. Stress can come from patterns of violent behaviour that are shaped by a multitude of forces within families and communities leading to breakdown in marital relationship. African women with infertility have been subjected to domestic violence due to infertility. Violence against women in intimate relationship is a profound health problem that saps women's energy, compromises their physical and mental health, erodes their self-esteem and prevents them from achieving their full potential as postulated by Krug [47], it is therefore aimed in this present study to examine the interplay between intimate partner violence and infertility having considered the following premises: 1. Either the male or female partners can be responsible for infertility in around 30% cases or both are involved in another 25 to 30% cases while the remaining 10 to 15% case no cause could be found (unexplained infertility) [35],[48]; 2. Thirty percent of sub-fertile couples have no identified medical cause (unexplained infertility)[49];3. The psychological trauma caused by sexual violence can lead to ovulation infertility or sexual dysfunction, infertile women had experienced sexual violence three times in their lives compared to fertile women [50]; 4. Since psychosomatic disorders (disturbances in which emotional maladjustment leads to chronic dysfunction in some organ system) and complications pose a great threat to fertility, one is then curious to examine how intimate partner violence (sexual, physical and psychological) increases infertility in women of reproductive age in Nigeria.

OBJECTIVES OF THE STUDY

The main objective of the study was to examine how intimate partner violence (sexual, physical and psychological) increases infertility in women of reproductive age in Nigeria. Specifically, the study examined the relationship between socio-demographic and childlessness among married women in Nigeria. The relationship between other risk factors and experience of infertility among married women were also examined.

METHODS

Data for this study was obtained from 2013 Nigeria Demographic and Health Survey (NDHS). A representative sample of 38,948 households was selected for the 2013 NDHS survey. The survey involved the use of a three-stage sampling technique and the selection procedures run thus: The sample for the 2013 NDHS was a stratified sample, selected independently in three stages from the sampling frame. Stratification was achieved by separating each state into urban and rural areas. In the first stage, 893 localities were selected with probability proportional to size and with independent selection in each sampling stratum. In the second stage, one EA was randomly selected from most of the selected localities with an equal probability selection. In a few larger localities, more than one EA was selected. In total, 904 EAs were selected. After the selection of the EAs and before the main survey, a household listing operation was carried out in all of the selected EAs. The household listing involved visiting each of the 904 selected EAs, drawing a location map, and a detailed sketch map. The research team also recorded on the household listing forms all occupied residential households found in the EA with the address and the name of the head of the household. If a selected EA included less than 80 households, a neighbouring EA from the selected locality was added to the cluster and listed completely. The resulting list of households served as the sampling frame for the selection of households in the third stage.

In the third stage of selection, a fixed number of 45 households were selected in every urban and rural cluster through equal probability systematic sampling based on the newly updated household listing. [51] The survey procedures and instruments were ethically

approved by the Ethics Committee of the ICF Macro International, Inc., Calverton, Maryland, USA and the National Research Ethics Committee in Nigeria before the commencement of the data collection. Informed consent, both verbal and written was also obtained from all the individual respondents involved in the data.

The focused, target population for this study were all women in Nigeria who were selected and interviewed for domestic violence module (v044) in 2013 NDHS, while categories of women that were not selected, selected but privacy for interview not possible and those that were selected but not interviewed were appropriately dropped from the study. Further inclusion or exclusion was done based on the following conditions 1. Respondents must either be currently married or living with a partner/spouse; 2. Must have been married/cohabited or living with a partner for at least two years preceding the survey; 3. Must provide valid answer to whether currently pregnant, if no child and not currently pregnant, must not be currently using contraceptive

Dependent Variable

The dependent variable for this study is fertility status (fertile or infertile/childlessness). For a respondent to be regarded as infertile in this study, such respondent must either be currently married or living with a sexual partner/spouse; 2. Must have been married/cohabited or living with a partner for at least two years duration preceding the survey; 3. Must not be currently or ever pregnant and must not have given birth to a child 4. Must not be currently using any contraceptive method.
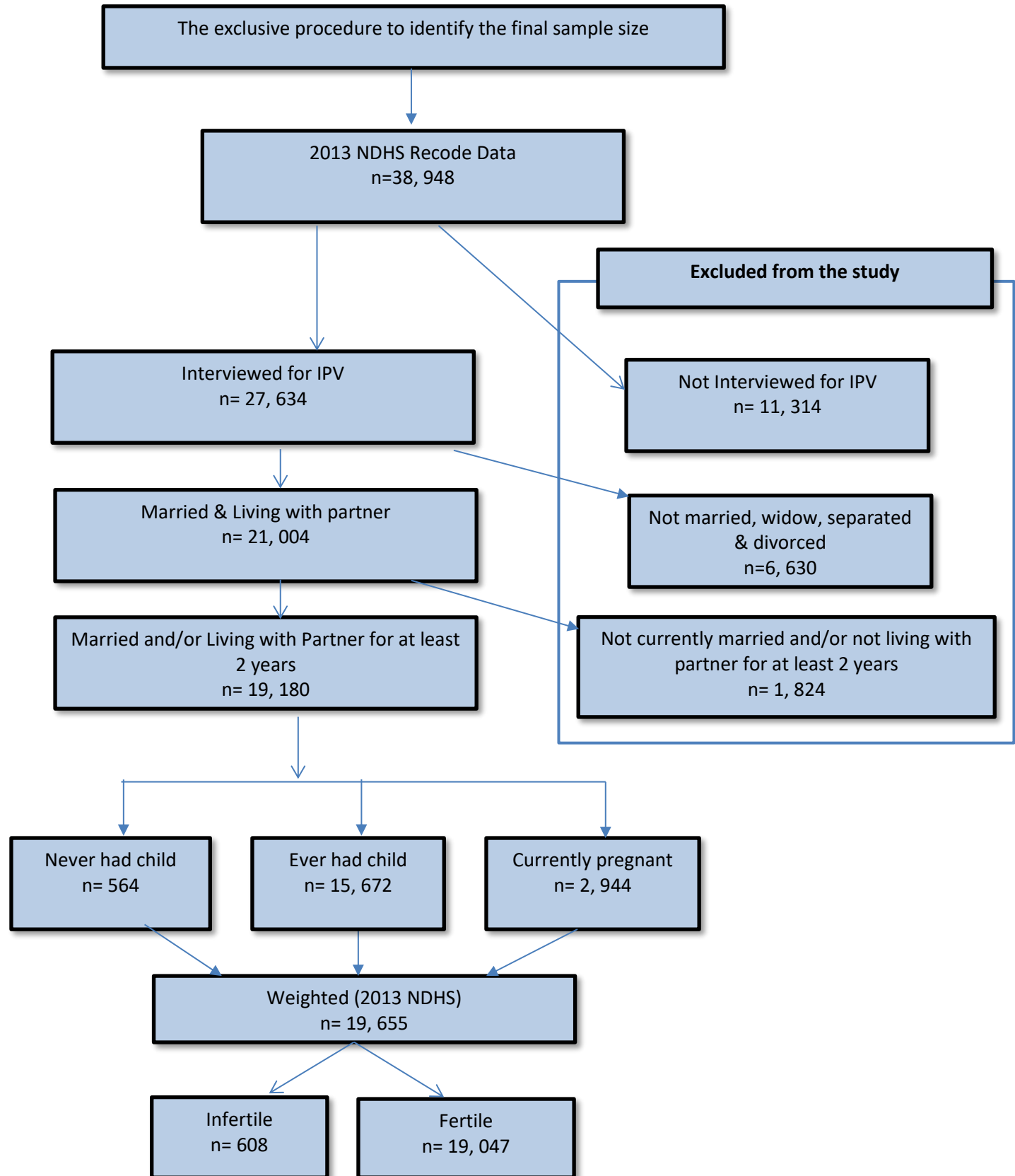
Main Independent Variable

Experience of intimate partner violence which could be physical, sexual or emotional/psychological was measured in the data by various questions. In respect to physical violence women were asked whether partner had ever pushed, shook or threw something, slapped, punched with fist or something harmful, kicked or dragged, tried to strangle or burn, threatened with knives, gun or other weapons, and twisted her arm or pull her hair. While in the case of sexual violence, women were asked if spouse/partner ever forced them to have sex or other sexual act when not wanted. Emotional violence was measured with the following enquiries if partner ever humiliated, threatened with harm and insulted or made her feel bad.

The data were further weighted in order to remove any error of sampling randomization and representativeness biases.

To obtain information about respondents' socio-economic and demographic background the following selected variables were extracted from the dataset - age, education, household wealth status, religion and place & region of residence and family type. Other variables extracted were ever had terminated pregnancy, ever use anything or tried to delay or avoid pregnancy and partner alcohol in-take. The frequency of all variables of interest was analysed in the "total column" of Tables 1 and 2. The first two tables also showed the bivariate analysis of fertility status and all the respondents' socio-demographic background and other variables respectively; which were determined using row percentage distribution and pearson's chi-square (χ^2) test. A three-model binary logistic regression was used to test for the odds of infertility considering other independent variables. First model predicted infertility (dependent/outcome variable) through intimate partner violence experience (main independent variable) and this was the unadjusted model. Adjusted model examined the joint-effect of intimate partner violence experience of respondents and their socio-demographic characteristics on fertility status (model 2). All the extraction of target population from the data set, variables of interest and analyses were done using STATA 14.

Ethical approval

The Institutional Review Board of ICF International, Inc. reviewed and approved the data used for this analysis. The Institutional Review Board of ICF International complied with the United States Department of Health and Human Services regulations for the protection of human research subjects. The ethical approval and clearance was equally obtained by MEASURE DHS from National Ethics Committee of the country before the commencement of data collection. Informed consent both verbal and written was also obtained from all the individual respondents before the commencement of the interview. Respondents have the right and opportunity to opt out of the interview at any point. No trace of identification of the respondents was left in the process of the data collection.

The exclusive procedure to identify the final sample size

2013 NDHS Recode Data
n=38, 948

Excluded from the study

Interviewed for IPV
n= 27, 634

Not Interviewed for IPV
n= 11, 314

Married & Living with partner
n= 21, 004

Not married, widow, separated & divorced
n=6, 630

Married and/or Living with Partner for at least 2 years
n= 19, 180

Not currently married and/or not living with partner for at least 2 years
n= 1, 824

Never had child
n= 564

Ever had child
n= 15, 672

Currently pregnant
n= 2, 944

Weighted (2013 NDHS)
n= 19, 655

Infertile
n= 608

Fertile
n= 19, 047

RESULTS

Table 1. Relationship between socio-demographic and childlessness among married women in Nigeria

Variables/Categories			Fertility Status		Total	χ^2	*p-value*
			Infertile	**Fertile**			
Age	15-19		13.1	86.9	954	364.41	*0.000*
	20-24		3.9	96.1	3061		
	25-29		2.2	97.8	4503		
	30-34		2.5	97.5	3792		
	35-39		1.7	98.3	3086		
	40-44		2.8	97.2	2249		
	45-49		2.4	97.6	2008		
Residence	Urban		2.7	97.3	7433	7.99	*0.003*
	Rural		3.4	96.6	12222		
Education	No formal		3.8	96.2	9097	45.56	*0.000*
	Primary		2.1	97.9	3845		
	Secondary		2.3	97.7	5248		
	Tertiary		4.2	95.8	1466		
Religion	Christian		2.6	97.4	7949	15.21	*0.000*
	Islam		3.5	96.5	11389		
	Others		2.0	98.0	205		
Wealth Index	Poorest		4.0	96.0	4321	23.74	*0.000*
	Poorer		3.5	96.5	4101		
	Middle		2.5	97.5	3517		
	Richer		2.5	97.5	3701		
	Richest		2.8	97.2	4015		
	Region	North Central	1.8	98.2	2778	69.90	*0.000*
		North East	4.7	95.3	3065		
		North west	3.6	96.4	6760		
		South East	3.1	96.9	1688		
		South South	3.2	96.8	2044		
		South West	1.6	98.4	3320		
Family Type	Monogamy		3.1	96.9	14874	0.28	*0.627*
	Polygamy		3.0	97.0	4698		

Table 1 provides the percent distribution of respondents' socio-economic and demographic characteristics by fertility status (fertile and infertile). The results revealed that age of respondents had significant association with fertility status (χ^2=364.41, *p*<0.001). By age group, infertility rate was highest among women aged 15-19 years (13.1%); this could be temporary considering the fact that they just enter into marriage and still have many years to go through in the reproductive years. The least infertility rate was found among age group 35-39 (1.7%). Place of residence, educational level, religion, wealth index and region were all significantly associated with fertility status. In contrast, family type was insignificantly related to fertility status. There was a significantly higher rate of infertility among the rural residence than their urban counterparts (3.2% and 2.7% respectively; χ^2=7.99, P<0.005). An examination of infertility by educational status shows that more married women with tertiary education (4.2%), follow by those with no formal education (3.8%) experience infertility than those with other levels of educational status. However, education of married women has significant relationship with fertility status (χ^2=45.56, *p*<0.001). There were highest rates of infertility among women who were Muslim (3.5%), of poorest wealth index (4.0%), and reside in North Eastern zone (5%). Even though family type has no significant association with incidence of fertility status (χ^2=0.28, *p*>0.05), the prevalence rate was very slightly higher among those in monogamous family setting (3.1%) than those in polygyny homes (3.0%).

Table 2. Relationship between other risk factors and experience of infertility among married women

Variables	Categories	Fertility Status		Total	χ^2
		Infertility	Fertility		(p-value)
Partner Drink Alcohol	No	3.3	96.7	15969	8.243
	Yes	2.4	97.6	3643	(0.002)
Ever Terminated Pregnancy	No	3.0	97.0	16907	4.870
	Yes	3.8	96.2	2728	(0.016)
Sexual Violence	No	3.2	96.8	18772	4.034
	Yes	1.9	98.1	833	(0.028)
Emotional Violence	No	3.3	96.7	15934	7.014
	Yes	2.4	97.6	3681	(0.005)
Physical Violence	No	3.2	96.8	16824	3.615
	Yes	2.5	97.5	2750	(0.033)
Ever experienced Intimate Partner Violence	No	3.3	96.7	14808	7.291
	Yes	2.5	97.5	4719	(0.004)
Ever use something to delay pregnancy	No	3.9	96.1	14449	107.851
	Yes	1.0	99.0	5207	(0.000)

Table 2 presents the fertility status (fertile and infertile) and other covariate risk factors; the table shows the bivariate analysis of the association between the covariate risk factors and fertility status of married women in Nigeria. Firstly, findings show that all the tested risk factors were significantly associated with fertility status. Infertility was significantly lower among women whose husbands or partners take alcohol than those who reported that their partners do not take alcohol (χ^2=8.243, $p<0.05$). Infertility rate was relatively higher among women who never experience sexual violence (3.2% vs 1.9%), emotional violence (3.3% vs 2.4%) and physical violence (3.2% vs 2.5%). In sum, the result reveals a significant relationship between ever experienced intimate partner violence and experience of fertility status (χ^2=7.291, $p=0.004$). Ever terminated pregnancy in the past could be used to measure rate of secondary infertility in women. In this study analysis, the association between ever terminated pregnancy and present fertility status revealed higher statistical significant (χ^2=4.870, $p<0.05$) infertility experience among women who had ever terminated pregnancy in the past was relatively lower than the experience among those who never experience pregnancy termination (3.0% and 3.8% respectively). Significant association exist between ever use something to delay pregnancy and present fertility status (χ^2=107.851, $p<0.001$), those who had never use anything to delay pregnancy experienced infertility more (3.9%) when compared with their counterparts who ever attempted pregnancy delay (1.0%).

Table 3 presents multivariate interrelationship between the main independent and other explanatory variables as predicting factors of infertility among currently married women or women living with partners in Nigeria. The table displays a three-model binary logistic regression analyses where Model 1 presents the unadjusted relationship between IPV and infertility, while Model 2 and 3 show the predicting power of IPV on infertility considering the co-founding effects of other risk factors (adjusted). Result in Model 1, unadjusted odds ratio predicting infertility through IPV indicates that the odds of infertility was 33% higher among those with no IPV experience than those who had IPV experience (UOR=1.328, $p<0.05$, CI=0.83-1.629). Result from the adjusted model (2) shows that IPV findings retained its influence as in Model 1 but at a non-significance lower rate. Result shows that the odds of infertility was 17% higher among those who did not experience IPV when compared with the odds of their counterparts who experienced IPV (AOR=1.165, $p>0.005$; CI: 0.938-1.448). Likewise, in model 3, there was a declined non-significance odds ratio of infertility among women who did not experience IPV compared to their counterparts who experienced IPV (AOR=1.064, $p>0.005$; CI: 0.854-1.327).

Table 3. Odds ratios of binary logistic regression predicting infertility through intimate partner violence, socio-demographic characteristics and other risk factors

Variables/Categories	Model 1		Model 2		Model 3	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Ever experienced Intimate Partner Violence						
No	1.328^s	1.083-1.629	1.165^{ns}	0.938-1.448	1.064^{ns}	0.854-1.327
Yes[RC]	1.000		1.000		1.000	
Age group						
15-19			6.125^s	4.315-8.695	6.339^s	4.455-9.021
20-24			1.757^s	1.246-2.476	1.830^s	1.295-2.588
25-29			0.961^{ns}	0.678-1.362	0.997^{ns}	0.702-1.417
30-34			1.059^{ns}	0.745-1.505	1.123^{ns}	0.789-1.599
35-39			0.718^{ns}	0.484-1.065	0.762^{ns}	0.513-1.132
40-44			1.187^{ns}	0.811-1.737	1.257^{ns}	0.858-1.843
45-49[RC]			1.000		1.000	
Place of Residence						
Urban			0.958^{ns}	0.751-1.222	0.991^{ns}	0.776-1.266
Rural[RC]			1.000		1.000	
Educational Attainment						
No Education			0.728^{ns}	0.480-1.106	0.590^s	0.388-0.897
Primary			0.476^s	0.318-0.711	0.404^s	0.269-0.607
Secondary			0.495^s	0.353-0.693	0.454^s	0.323-0.640
Tertiary[RC]			1.000		1.000	
Religion Affiliation						
Christianity			1.521^{ns}	0.524-4.416	1.799^{ns}	0.619-5.228
Islam			1.377^{ns}	0.481-3.946	1.355	0.471-3.894
Others[RC]			1.000		1.000	
Wealth Index						
Poorest			0.737^{ns}	0.482-1.126	0.663^{ns}	0.434-1.014
Poorer			0.716^{ns}	0.476-1.077	0.629	0.417-0.947
Middle			0.687^s	0.474-0.997	0.611	0.420-0.889
Richer			0.788^{ns}	0.575-1.080	0.750	0.546-1.030
Richest[RC]			1.000		1.000	
Region of Residence						
North Central			1.032^{ns}	0.683-1.559	0.850^{ns}	0.560-1.291
North East			2.379^s	1.621-3.491	1.794^s	1.213-2.653
North West			1.644^s	1.136-2.379	1.290^{ns}	0.882-1.888
South East			2.081^s	1.392-3.111	1.654^s	1.099-2.489
South South			2.057^s	1.396-3.031	1.808^s	1.221-2.677
South West[RC]			1.000		1.000	
Partner's took Alcohol						
No					1.110^{ns}	0.832-1.482
Yes[RC]					1.000	
Pregnancy Termination						
No					0.691^s	0.551-0.868
Yes[RC]					1.000	
Ever Used anything to delay pregnancy						
No					4.484	3.232-6.221
Yes[RC]					1.000	

Note: RC=Reference Category (1.000); ns=not significant; s=significant

DISCUSSION

Infertility, the inability of couples to achieve conception despite frequent, unprotected sexual intercourse for at least one-year duration or carry at least a pregnancy to the delivery of a live baby was the focus of this study. Intimate partner violence and infertility are two health issues that women alone suffer most. Although intimate partner violence has gained public attention over time, but infertility looks like a lesser problem to the public, but it is no gain saying that in most African societies, marital satisfaction is incomplete without child bearing. Apart from several factors like tubal, uterine, ovarian and cervical factors, infections, environmental, genetic, dietary and other patterns of lifestyle that have been highlighted as the predictors of infertility in previous literature [13],[21],[34]-[36], infertility has severally been traced or associated with various elevated stress levels [37], [38],[46] but up till now, little is known about the effect of intimate partner violence (IPV) on fertility status despite the acclaimed impact of stress and psychological disorder of IPV on women's sexual and reproductive health [37]-[45]. Due to assumed IPV induced sexual, emotional, psychological and physical stress in currently married women in Nigeria, our study with a national representative dataset attempted to fill this gap in literature; the relationship between IPV and reproductive dysfunction (infertility to be specific).

Of the 3.1% who experienced infertility among the total study population, the study revealed that 83% and 16% of the respondents experienced primary and secondary infertility respectively. Age of respondents had significant association with fertility status. By age group, infertility rate was highest among women aged 15-19 years, this collaborate one of the conclusions of Sule [13] in their study among women in southwestern Nigerian community and Roupa [52] in their study of causes of infertility in women at reproductive age in Greece. Though, this could be temporary considering the fact that this younger age group just enter into marriage and still have many years to go through in the reproductive years. Place of residence, educational level, religion, wealth index and region were all significantly associated with fertility status. Our finding on regional variation collaborated earlier report as previously observed by Larsen [6] using World Fertility Surveys and Demographic Health Surveys in Cameroon and Nigeria where marked regional variation in the incidence of infertility among currently married women was found.

Higher prevalence of infertility was observed among women who reside in the northern part of Nigeria than their counterparts in the southern regions. One plausible explanation for this regional variation in fertility could be divergent lifestyles and diets among various regional residents in the country. There was a significantly higher rate of infertility among the rural residence than their urban counterparts, also, lifestyle, work-style, economic power and knowledge and assess to available health opportunity could be several possible explanations for this rural/urban variation. An examination of infertility by educational status shows that more married women with tertiary educational level; follow by those with no formal education experience infertility than those with other levels of educational status. There were highest rates of infertility among women who were Muslim, of poorest wealth index, and reside in North Eastern zone. In contrast, family type was insignificantly related to fertility status. Even though family type has no significant association with incidence of fertility status, the prevalence rate was slightly higher among those in monogamous family setting than those in polygyny homes.

Our study also revealed that infertility was significantly lower among women whose husbands or partners take alcohol than those who reported that their partners do not take alcohol, what a paradox? This finding on alcohol disassociates from the earlier claim between related lifestyle of alcohol and infertility as reported by some researchers [53],[54].

Though other previous [55]-[57] have established infertility as a significant risk factors for intimate partner violence but intimate partner violence correlated negatively with experience of infertility among currently married women in Nigeria in this present study. Ever terminated pregnancy in the past could be used to measure rate of secondary infertility in women. In this study, infertility experience among women who had ever terminated pregnancy in the past was relatively lower than the experience among those who never experience pregnancy termination. Significant association exist between ever use something to delay pregnancy and present fertility status, those who had never use anything to delay pregnancy experienced infertility more when compared with their counterparts who ever attempted pregnancy delay.

CONCLUSION

According to the findings of this study, prevalence of infertility was relatively low among the currently married women who were living with their partners in

the last two years preceding the survey. Though, the study revealed a significant relationship between ever experienced intimate partner violence and fertility status of currently married women but intimate partner violence was negatively correlated with infertility experience among currently married women in Nigeria.

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