ORIGINAL RESEARCH ARTICLE

Do Knowledge and Cultural Perceptions of Modern Female Contraceptives Predict Male Involvement In Ayete, Nigeria?

Ayodeji A. Sanusi[1], Oluwaseun O. Akinyemi[2]and Oghenetega O. Onoviran[3]*

[1]Department of Maternal and Child Health, Gillings School of Global Public Health, The University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; [2]Department of Health Policy and Management, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria; [3]Department of Obstetrics and Gynaecology, Faculty of Clinical Sciences, University of Abuja Teaching Hospital, Gwagwalada, Abuja, Nigeria.

***For Correspondence:** *Email:sanusi@live.unc.edu; Phone: +1-919-525-6707*

Abstract

Male involvement is crucial to female contraceptive use. This study examined how male knowledge and cultural perceptions of modern female contraceptives influence involvement in contraceptive use. A cross-sectional survey of 389 men from Ayete, Nigeria was used to regress a continuous male involvement score on demographic variables, knowledge of at least one method of modern female contraception and a scored male perception variable using Ordinary Least Squares regression. Controlling for perception, the knowledge of at least one method of modern female contraception was not significantly associated with a change in male involvement (p=0.264). Increasing positive perception was associated with higher male involvement scores (p=0.001). Higher educated males, those with a current desire to have children and males whose partners were currently using a method had greater male involvement scores (p<0.05). Policy and intervention efforts should be focused on changing cultural perceptions, in addition to providing in-depth knowledge of contraceptive methods. *(Afr J Reprod Health 2014; 18[4]: 105-114).*

Keywords: Partner involvement, Family Planning, Nigeria, Contraception, Culture

Résumé

Cette étude a examiné comment la connaissance par les hommes des méthodes contraceptives féminines modernes et leurs perceptions culturelles influencent la participation à la contraception féminine. Une enquête transversale de 389 hommes de Ayete, l'État d'Oyo, au Nigeria a été utilisé pour régresser un score continu de participation des hommes, sur les variables démographiques, la connaissance d'au moins une méthode de contraception féminine moderne et une variable de la perception masculine classée par les modèles de la régression ordinaire des moindres carrés. Le contrôle pour la perception, la connaissance d'au moins une méthode de la contraception féminine moderne n'était pas significativement associé à un changement dans la participation des hommes (p = 0,264). L'accroissement de la perception positive a été associé à des scores plus élevés de la participation des hommes (p = 0,001). Les hommes hautement instruits, ceux qui ont un désir actuel d'avoir des enfants et les hommes dont les partenaires actuellement se servaient d'une méthode avaient plus des scores masculins de participation (p <0,05). La politique et les efforts d'intervention devraient être axés sur l'évolution des perceptions culturelles, en plus de fournir une connaissance approfondie des méthodes contraceptives. *(Afr J Reprod Health 2014; 18[4]: 105-114).*

Mots-clés: participation des hommes, contraception féminine, perception culturelle, planification familiale, Nigeria

Introduction

Numerous studies worldwide have identified partner opposition or non-approval of modern female contraceptives as a major factor hindering their uptake[1-4]. Local studies in Nigeria have also corroborated these findings. For example, in 2000, Feyisetan et al documented that among Yorubas, marital partners who discuss and take joint decisions on contraceptives have higher contraceptive prevalence rates[5]. Similarly, Nte et al in 2009, found that more than half of 558 women in Port Harcourt said they would discontinue family planning methods if their partners objected[6]. In 2011, focus groups and in-depth interviews with family planning providers and contraceptive users in Enugu and Katsina, found that in communities where hormonal methods are perceived as not acceptable, spousal involvement was perceived to be important in making these methods acceptable[7]. Also, Aransiola et al in 2014, from sixteen focus group

discussions among women in Ibadan and Kaduna, reported that male partner support for family planning use was low and specifically targeting males may improve the uptake of family planning[8]. Among 335 HIV positive women in Cross river, Okigbo et al in 2014 also found a widespread perceived partner opposition to family planning use[9]. These studies all highlight how male involvement in family planning is crucial to the choice, use and fertility regulation of their female partners.

Although some studies have ascribed the low uptake of modern contraceptives in Nigeria to a lack of awareness of contraceptive methods and low literacy levels[10-13], most studies including the nationally representative Demographic and Health Survey (DHS) have concluded that the knowledge of at least one method of modern female contraception is almost universally high among Nigerian men[14-16]. The 2013 National Demographic and Health Survey found that 95.8% (regional variation 84.0-100.0) of men had heard of at least one modern method of family planning[16]. Oyediran et al, among 1451 ever married men also found that 90 percent of his respondents knew at least a method of family planning[15]. Also, although Lawoyin et al in 2002 found that the use of modern female contraceptives was low, at least 73.3% of his respondents knew a contraceptive method[14]. Even among Northern Nigerian men, the knowledge of contraceptive methods is high despite significant opposition to their use[17] .

Although the knowledge of modern contraceptive methods is now widespread and their role in reducing maternal mortality is known[16,18-20], the contraceptive prevalence rate has remained at ten percent for any modern method between 2008 and 2013 in Nigeria, the unmet need for contraception is still high at 16.1 percent, and total fertility rates have only declined by 0.2 children per woman over the same period[16]. Not surprisingly, the maternal mortality ratio (MMR) has only marginally declined to 576 per 100,000 live-births and Nigeria still has the second largest number of maternal deaths, accounting for 14 percent of global maternal deaths annually[16,21,22]. Rural Nigerian women fare worse than their urban counterparts with higher total fertility rates (1.5 more children per woman on average), and an almost three fold lower modern contraceptive use[16]. Rural Nigerian men may therefore be crucial to increasing the use of modern female contraceptives among their partners.

Across Nigeria, there are cultural myths and norms that influence the perception of modern female contraceptives[7,13,23,24]. For example, some Nigerian cultures believe that modern female contraceptive use can lead to infertility later in life and that a woman who uses contraceptives will not have the pre-assigned number of children God has for her and become infertile in re-incarnation[13,24]. These myths possibly hinder modern contraceptive uptake especially in rural areas, where cultural perceptions are known to be stronger. Other predictors of contraceptive use identified from prior studies in Nigeria include higher level of education, having no religious opposition, no desire to have more children, a greater number of living children, longer duration of marriage, living in an urban region and having been counseled for family planning[14,15,17,25].

To our knowledge, no study has evaluated the joint role of cultural perceptions and knowledge of modern female contraceptive methods on contraceptive use among rural Nigerian men. Family planning policies and programmes need a strong evidence base for their design and implementation, especially in developing countries where resources are scarce. This study seeks to provide evidence for strategies that may help increase the involvement of rural Nigerian males in modern female contraception.

Methods

This cross sectional study was part of a larger study on male involvement in modern female contraceptive use. The data come from a survey of 389 men in Ayete, the capital and geographically largest of the three towns that make up Ibarapa North Local Government[26], and was collected between December 2009 and February 2010. Ayete was selected by a simple random sample of the three towns. Prior to data collection, the questionnaire was translated to Yoruba and pretested in Igbo-Ora, a neighbouring village. The sample size was calculated using Cochran's

formula for sample size estimation[27,28]. The level of precision was 5%, the Z-score (1.96) corresponds to the 95% confidence interval and the degree of variability was 0.601, which was the prevalence of married men knowing injectable contraceptives from the NDHS 2003. This gave approximately 368 respondents.

The total population of Ayete was 13,378 persons, as confirmed from the local government headquarters, and the total population of Ibarapa North, the local government in which Ayete is located was 100,293 persons[26]. A cluster sampling of the six major residential quarters in Ayete (Isawo, Imofin, Gbodeko, Iwafin, Iki, Ikogba) was done and the source population was all men in Ayete. Eligible households were selected by a systematic random sample in each of the residential quarters. Males included in this study were aged over 18 years, had been cohabiting, married or separated in the two years preceding the study and had been regularly resident in Ayete for at least one year. Recruitment and questionnaire administration was by trained interviewers. Only one man (typically the head of the household or oldest male) in each eligible household was interviewed. Each participant gave an informed consent to participate in the study.

The dependent variable, male involvement in modern female contraceptive use was measured and scored on a continuous scale generated from responses to 12 questions (Box 2). Respondents who answered yes to the first five questions were scored a one, except for the question on family planning conversation initiation, which was scored a two if the man initiated the conversation, one if the woman did and zero if some other person did. The latter seven questions were scored a one if either the man only or woman only was solely responsible for decision making, a two if these decisions were to be jointly made and zero for other responses. This gave a score that ranged from zero to 20, with less than seven representing no male involvement, and between seven and 20, incrementally positive male involvement.

A key independent variable was knowledge of at least one modern female contraceptive (oral contraceptive pills, diaphragm, jelly/foam, Norplant/Implant, intra-uterine devices, injectables and female condoms). This was assessed by asking the men if they had heard about any of these methods.

Box 1: Demographic variables collected from males in Ayete, Oyo state, Nigeria; 2009.

Demographic variable	Reported as:
Age as at last birthday	Years
Highest level of education	No formal education, Primary, Secondary, Tertiary
Average monthly family income	Nigerian Naira (₦)
Number of Living children	Numeric
Religion	Islam, Christianity, Others
Marital Status	Married, Cohabiting, Separated
Family type	Monogamous, Polygamous
Tribe	Yoruba, Others- Igbo, Hausa, Eegun
Current desire to have children	Yes, No
Occupation	Farming, Trading, Artisan, Civil service, Public transporter, Unemployed, Others- Herbalist, Islamic cleric, student, night guard
Current use of a modern female contraceptive	Yes, No
Previous use of a modern female contraceptive	Yes, No

Note: As at the time of data collection, $1=₦150

The second main independent variable – perception score, was generated from 13 questions graded on a five point Likert scale- strongly disagree (0), disagree (1), I don't know (2), agree (3) and strongly agree (4) (Box 2). This gave a score that ranged from zero to 52, with scores between zero and 25 representing negative perceptions, 26 representing neither positive nor

negative perception (answered I don't know to all questions), and 27-52 positive perception. Five respondents had perception scores equal to zero and were therefore missing after transformation of perception score to its logarithmic form, leaving 384 respondents in the final data analysis.

Demographic variables collected are shown in Box 1. Current use and prior use of modern contraceptives were mutually exclusive categories. The decision to select these variables was based on findings from literature, demographic data collection and intuition for possible variables that may confound the effect of knowledge or perception on male involvement in modern female contraceptive use.

Box 2: Sample Perception and Male involvement questions used to score the independent and dependent variables; Ayete, Oyo state, Nigeria; 2009.

Variable	Questions	Response (score)
Cultural Perception	**Utility of Contraceptives**	
	1. "Contraceptives are good for women whose children are very little and who need some time to rest"	*Strongly Agree (4)* *Agree (3)* *I don't know (2)* *Disagree (1)* *Strongly Disagree (0)*
	2. "Contraceptives are good for couples who do not want to give birth anymore"	
	3. "Contraceptives are good when the health of a married woman requires it"	
	4. "Contraceptives are good for young girls who know that they cannot control themselves"	
	5. "Contraceptives can be used by couples to delay or prevent pregnancy so as to decide on the number of children they want"	
	6. "Contraceptives are good when married couples do not have the means to rear more children at that time"	
	7. "Contraceptives are for both the man and woman"	
	Myths	
	8. "A woman who uses contraceptives will still have the number of children God chose for her"	
	9. "The spirits of the children who cannot come will not revenge on the woman who uses contraceptives"	
	Perceived side effects	
	10. "Contraceptive use cannot lead to infertility or damage the womb"	
	11. "Contraceptive use does not affect ejaculation/orgasm"	
	12. "Contraceptives cannot cause a woman to be promiscuous"	
	13. "Contraceptive use does not reduce sexual enjoyment"	
Male Involvement	1. Have you ever discussed contraceptive use with your partner?	*Yes (1) No(0)*
	2. Who initiated the conversation?	*Man (2) Woman (1) Others(0)*
	3. Have you ever accompanied your partner to the family planning clinic?	*Yes (1) No (0)*
	4. Do you enquire about the family planning visit when your partner returns?	*Yes (1) No (0)*
	5. Do you provide money for the procuring contraceptives?	*Yes (1) No (0)*
	Who is responsible for making decisions on –	
	6. Family size	*Man (1) Woman (1) Both (2) Others(0)*
	7. When to have another child	*Man (1) Woman (1) Both (2) Others(0)*
	8. Whether to stop childbearing	*Man (1) Woman (1) Both (2) Others(0)*
	9. What to do to stop childbearing	*Man (1) Woman (1) Both (2) Others(0)*
	10. When to have sex	*Man (1) Woman (1) Both (2) Others(0)*
	11. Ending an unwanted pregnancy	*Man (1) Woman (1) Both (2) Others(0)*
	12. Duration of sexual abstinence	*Man (1) Woman (1) Both (2) Others(0)*

Data were entered with Microsoft Excel (Microsoft, Redmond, WA**)** and analysed with STATA 13 (STATACorp, College Station, TX). Tests of association between categorical variables were carried out using the Fisher's exact test or Chi-square as appropriate, and differences between

means and medians were evaluated with the Students t-test and Wilcoxon rank sum test respectively. Ordinary Least Square (OLS) models regressing the male involvement score on the knowledge of at least one modern female contraceptive, perception score, current and previous use of a modern female contraceptive, number of living children, the desire to have more children and demographic variables were fitted. The main hypothesis for this study was that knowledge of at least one modern female contraceptive and changes in perception scores will be associated with a change in male involvement in modern female contraception. Regression models with logarithmic and quadratic forms for all continuous variables were evaluated. Only the logged form for perception score and the quadratic form for family income were retained in the final model following specification tests (Adjusted R^2; Akaike's Information Criteria; Bayesian Information Criteria and statistical significance respectively). The interaction between the knowledge of at least one modern female contraceptive and perception score was not statistically significant.

Assessment of multicollinearity was done with Variance Inflation Factors (VIFs) and pairwise correlation. Individual VIFs for all independent variables ranged between 1.1 and 2.0 and the mean VIFs were between 1.3 and 1.4. Pairwise correlation for all the variables ranged between -0.3 (between age and occupation) and 0.6 (between age and the number of children), excluding multicollinearity. White's adjustment for heteroskedasticity did not significantly alter the standard errors on any of the variables. All statistical tests were at a double-sided significance level (α) of 0.05.

Results

The mean age of the respondents was 40.4years, median family income was 10,000 Nigerian Naira and the average number of children was 3.4. Most respondents had secondary level education (30.7%), were Moslems (78.9%), monogamous (68.8%), artisans (24.0%) and almost 98% were from the Yoruba tribe. Approximately ten percent of the respondents had partners that were currently using a modern female contraceptive and only three percent had partners that had previously used them but had discontinued their use. The mean perception score was 29.6 and the average male involvement score was 10.6. Almost 55% of the men knew at least one method of modern female contraception (Table 1).

From bivariate analyses, respondents with positive male involvement were significantly younger by almost five years and had higher average perception scores than respondents with poor male involvement ($p<0.05$). In addition, males with positive involvement scores were more likely to have partners currently using a contraceptive method and were also more likely to currently want a child ($p<0.01$). There were weak associations between previous contraceptive use, family type and male involvement but they did not reach statistical significance ($p<0.10$;Table 1).

Multivariate analyses showed that men who knew at least a method of modern female contraception did not have significantly higher male involvement scores than men who did not ($p=0.26$). In contrast, a unit increase in the perception score was associated with an increase in male involvement score by 0.03units ($p<0.01$). Similarly, men who reported that their partners were currently using a modern method had a 3.9 higher male involvement score on average compared to men whose partners were not.

Men with no formal education, had significantly lower male involvement scores (1.1units) compared with men with secondary school education ($p=0.03$). However, the coefficients for men with primary and tertiary education did not reach statistical significance. Current desire to have a child was also significantly associated with a higher average male involvement score (1.2units). In addition, compared to Yoruba men, respondents who were from other tribes had higher average male involvement scores (2.5units; $p=0.01$).

Overall, family income, previous use of a modern female contraceptive by female partners of the respondents, occupation, marital status, family type, religion, number of living children and age of the male partner were not significantly associated with a change in male involvement in modern female contraceptive use.

Table 1: Socio-demographic characteristics, Contraceptive Knowledge and Perception of respondents, by Male Involvement; Ayete, Nigeria. 2009.

Characteristic	Total sample (N=384)	Poor Male Involvement (n=73)	Positive Male Involvement (n=311)
Age *(Mean ±SE)*	40.4 ± 0.8	44.0 ± 2.3	39.5 ± 0.9**
18-34	167 (43.5%)	26 (35.6%)	141 (45.3%)*
35-50	138 (35.9%)	25 (34.3%)	113 (36.3%)
>50	79 (20.6%)	22 (30.1%)	57 (18.3%)
Monthly Family income *(Median)*	10,000 (500-100,000)	11,000 (850-75,000)	10,000 (500-100,000)
Number of Living Children *(Mean)*	3.4 ± 0.1	3.7 ± 0.3	3.3 ± 0.1
Perception score	29.6 ± 0.4	27.3 ± 0.9	30.2 ± 0.5***
Knowledge of at least one method of modern female contraceptives			
Yes	210 (54.7%)	32 (43.8%)	178 (57.2%)**
No	174 (45.3%)	41 (56.2%)	133 (42.8%)
Level of Education			
No formal education	91 (23.7%)	20 (27.4%)	71 (22.8%)
Primary	101 (26.3%)	22 (30.1%)	79 (25.4%)
Secondary	118 (30.7%)	18 (24.7%)	100 (32.2%)
Tertiary	74 (19.3%)	13 (17.8%)	61 (19.6%)
Religion			
Islam	303 (78.9%)	59 (80.8%)	244 (78.5%)
Christianity	81 (21.1%)	14 (19.2%)	67 (21.5%)
Family type			
Monogamous	264 (68.8%)	44 (60.3%)	220 (70.7%)*
Polygamous	120 (31.2%)	29 (39.7%)	91 (29.3%)
Marital status			
Married	304 (79.2%)	57 (78.1%)	247 (79.4%)
Cohabiting	17 (4.4%)	4 (5.5%)	13 (4.2%)
Separated	63 (16.4%)	12 (16.4%)	51 (16.4%)
Widowed	0 (0.0%)	0 (0.0%)	0 (0.0%)
Occupation			
Artisan	92 (24.0%)	13 (17.8%)	79 (25.4%)
Farming	90 (23.4%)	22 (30.1%)	68 (21.9%)
Public Transporter	60 (15.6%)	12 (16.4%)	48 (15.4%)
Trading	44 (11.5%)	11 (15.1%)	33 (10.6%)
Civil servants	10 (2.6%)	3 (4.1%)	7 (2.3%)
Unemployed	61 (15.9%)	6 (8.2%)	55 (17.7%)
Others	27 (7.0%)	6 (8.2%)	21 (6.8%)
Tribe			
Yoruba	375 (97.7%)	73 (100.0%)	302 (97.1%)
Others	9 (2.3%)	0 (0.0%)	9 (2.3%)
Current use of a modern female contraceptive			
Yes	39 (10.2%)	0 (0.0%)	39 (12.5%)***
No	345 (89.8%)	73 (100.0%)	272 (87.5%)
Previous use of a modern female contraceptive			
Yes	12 (3.1%)	0 (0.0%)	12 (3.9%)*
No	372 (96.9%)	73 (100.0%)	299 (96.1%)
Current desire to have a child			
Yes	122 (31.8%)	10 (13.7%)	112 (36.0%)***
No	262 (68.2%)	63 (86.3%)	199 (64.0%)

Note: *p<0.10 **p<0.05 ***p<0.01; As at the time of data collection, $1=₦150; Male involvement score (Poor <=7; Positive >7); Monthly family Income is presented as Median (Range); Number of Living Children is presented as Mean ± SE.

Table 2: Multivariate OLS regression results of male involvement score on knowledge, perception, and demographic variables among rural men in Ayete, Nigeria 2009.

Variable	Co-efficient	p-value
Age	-0.005	- 0.7
Family income	0.05*	0.05
Number of living children	0.06	0.4
Level of Education		
Secondary (ref)		
No formal education	-1.1**	0.03
Primary	-0.5	0.2
Tertiary	-0.2	0.7
Religion		
Islam (ref)		
Christianity	0.08	0.8
Family Type		
Monogamous (ref)		
Polygamous	-0.06	0.9
Marital Status		
Married (ref)		
Cohabiting	-0.5	0.6
Separated	-0.7*	0.09
Occupation		
Farming (ref)		
Trading	-0.2	0.8
Artisan	0.07	0.9
Public Transporter	-0.5	0.4
Civil servants	-0.2	0.8
Unemployed	0.7	0.2
Others	-0.3	0.7
Tribe		
Yoruba (ref)		
Others	2.5***	0.009
Knowledge of at least one method of modern female contraception		
Knows at least one method *(ref)*		
Does not know any method	-0.3	0.2
Perception score	1.5**	0.02
Current use of a modern female contraceptive		
No (ref)		
Yes	3.9***	0.00
Previous use of a modern female contraceptive		
No (ref)		
Yes	1.2	0.1
Current Desire to have a Child		
No (ref)		
Yes	1.2***	0.0

Note: *p<0.10 **p<0.05 ***p<0.01; *ref*: Referent group; Family Income was rescaled to thousand Naira. Perception score is in its Log form. Adjusted R^2 was 0.2918; N=384

Discussion

Our study found that although knowledge of at least one modern female contraceptive was independently associated with higher male involvement scores, this association was not statistically significant after controlling for cultural perception. In contrast, increasing positive perception was associated with higher male involvement. We also found that even among men

with the same perception score, male involvement scores were not significantly different between those who knew a method and those who did not. Cultural perception thus seems to have a more decisive role in determining male involvement as well as in moderating whether men had in-depth knowledge about modern female contraceptives. Awareness of a contraceptive method alone may therefore not improve male involvement.

These findings differ from other studies that have recommended increasing the awareness of female contraceptive methods as a means of improving male involvement[15]. Our findings on cultural perception are however analogous to findings from studies among women linking cultural perception to the use of modern female contraceptives. Health education programmes at the community level should focus on strategies aimed at changing cultural perceptions by using key opinion leaders, traditional society heads and heads of local unions to dispel cultural myths that still hinder contraceptive uptake. In addition, rather than the superficial promotion of awareness of contraceptive methods, health workers especially at the community level and the mass media should provide additional information on contraceptives including the known side effects of the different types. Myths about reduced sexual enjoyment and possible spiritual repercussions should also be dispelled via these means. Public health programs should consider using peer groups and role models among men in communities to promote in-depth knowledge, reduce cultural barriers and improve male involvement in female contraception.

We also found that male partners of current users of modern female contraceptives had a higher involvement score, and although it may be difficult to demonstrate temporality (whether better male involvement preceded contraceptive use or whether partner use fostered better male involvement), this taken together with the finding that previous use of a modern female contraceptive was not associated with better male involvement scores, makes it plausible to say that male involvement in contraceptive use is crucial to continuation or discontinuation of female contraceptive use.

The findings on education are similar to those by Ijadunola et al (2011) where males with post-secondary education had better male involvement in female contraceptive use[30]. Promoting education up to the secondary level may therefore be useful in increasing male involvement in contraceptive use by their partners. Government should continue to subsidize free education programs in public schools, increase efforts to improve the quality of education (through teacher trainings, allocation of more resources to equip schools and performance monitoring), and provide employment for graduates to serve as incentives and reduce the drop-out rate especially among rural males.

Also, the finding that men who desired a child had significantly higher male involvement scores is expected given that contraceptives will thwart the ability to have a child. These men are therefore more likely to be involved in both the decision of when to have sex and when to discontinue contraceptive use. The finding that men from other tribes had better involvement should be interpreted with caution given the relatively small number of non-Yoruba men in the sample.

Surprisingly, the current number of living children was not associated with a significant change in male involvement scores. This contrasts with findings by Oyediran et al (2002), who reported that ever-married men with eight or more children had a higher odds of having previously used a method of contraception with their partners[15]. Our study looked at more categories of partner relationships not only ever-married men and thus our findings may reflect the choice of cohabiting and separated men.

The strengths of this study include a composite assessment of male involvement and cultural perceptions while controlling for other factors previously identified from studies among Nigerian men. Unlike prior studies also, this study did not involve only married or ever married men, improving the generalisation of our findings to communities.

The limitations in this study include the potential for misclassification in current use and ever use of a contraceptive method by female partners of our respondents, given that some African women clandestinely use modern female

contraceptives without the knowledge of their male partners. We also acknowledge the potential for recall bias in the reported average monthly income. Whether an in-depth assessment of each contraceptive method should have been used to decide whether a participant knew a method or not, is however uncertain as nearly all studies on family planning assess knowledge as measured in this study. Possible biases arising from these would have been to underestimate the number current/previous users, while monthly income could have varied in either direction. Also, it may be difficult to dissociate temporally, male involvement and perception of modern female contraceptives. Nevertheless, this study provides new evidence and calls into question public health interventions that continue to focus on increasing awareness only while neglecting cultural perceptions as a means of improving the uptake of modern female contraceptives.

Conclusions

Shifting the focus of policy and health education interventions on family planning to effect a long term change in cultural perceptions about modern female contraceptives and not only the isolated promotion of male knowledge of modern female contraceptives, may be effective in promoting increased male involvement. Government, public health workers and other stakeholders should seek to dispel cultural myths through opinion leaders, promote in-depth knowledge of contraceptives through peer groups and promoting formal education up to the secondary school level. These may help reduce modern contraceptive discontinuation rates and thus reduce the number of maternal deaths and rates of unplanned pregnancies in rural Nigerian communities.

Acknowledgments

The authors will like to acknowledge the Ibarapa community project of the College of Medicine, University of Ibadan, Nigeria, the project director Prof. M.C. Asuzu, and the coordinator of studies Dr A.O. Adebiyi. We also acknowledge our colleagues who participated in data collection: Drs. Olusunmade O., Bello S.A., Olagoke O.O., Umah T.A.M., Animashaun I.A., Eke E.E.C., Okereke J.M., Adeoti O.T., Ajibola O.C. and Gbadamosi A.

Contribution of Authors

AAS, OOA and OO conceived the research idea. AAS and OO were involved in data collection. OOA provided technical oversight during data collection and facilitated community entry. AAS conducted the data analysis and wrote the first draft. All the authors edited the paper and approved the manuscript.

References

1. Hartmann M, Gilles K, Shattuck D, Kerner B, Guest G. Changes in couples' communication as a result of a male-involvement family planning intervention. *J Health Commun*. 2012;17(7):802-819.
2. Kamal N. The influence of husbands on contraceptive use by Bangladeshi women. *Health Policy Plan*. 2000;15(1):43-51.
3. Palamuleni ME. Socio-economic and demographic factors affecting contraceptive use in malawi. *Afr J Reprod Health*. 2013;17(3):91-104.
4. Mathe JK, Kasonia KK, Maliro AK. Barriers to adoption of family planning among women in eastern democratic republic of Congo: Original research article. *Afr J Reprod Health*. 2011;15(1):69-77.
5. Feyisetan BJ, Oyediran KA, Ishola GP. The role of men in family planning in Imo state of Nigeria. . 1998.
6. Nte AR, Odu N, Enyindah CE. Male involvement in family planning: Women's perception. *Niger J Clin Pract*. 2009;12(3):306-310.
7. Ujuju C, Anyanti J, Adebayo SB, Muhammad F, Oluigbo O, Gofwan A. Religion, culture and male involvement in the use of the standard days method: Evidence from Enugu and Katsina states of Nigeria. *Int Nurs Rev*. 2011;58(4):484-490. doi: 10.1111/j.1466-7657.2011.00900.x [doi].
8. Aransiola JO, Akinyemi AI, Fatusi AO. Women's perceptions and reflections of male partners and couple dynamics in family planning adoption in selected urban slums in Nigeria: A qualitative exploration. *BMC Public Health*. 2014;14:869-2458-14-869. doi: 10.1186/1471-2458-14-869 [doi].
9. Okigbo CC, McCarraher DR, Gwarzo U, Vance G, Chabikuli O. Unmet need for contraception among clients of FP/HIV integrated services in Nigeria: The role of partner opposition. *Afr J Reprod Health*. 2014;18(2):134-143.
10. Austin A. Unmet contraceptive need among married Nigerian women: An examination of trends and drivers. *Contraception*. 2014. doi: S0010-7824(14)00696-9 [pii].
11. Abdulrazaq AG, Kabir S, Mohammad NS, Suleiman IH. The effect of educational intervention on family planning knowledge, attitudes, and practices among

married women in a military barrack in Northern Nigeria. *Afr J Reprod Health*. 2014;18(1):93-101.
12. Sedgh G, Bankole A, Oye-Adeniran B, Adewole IF, Singh S, Hussain R. Unwanted pregnancy and associated factors among Nigerian women. *Int Fam Plan Perspect*. 2006;32(4):175-184. doi: 3217506 [pii].
13. Omo-Aghoja LO, Omo-Aghoja VW, Aghoja CO, et al. Factors associated with the knowledge, practice and perceptions of contraception in rural Southern Nigeria. *Ghana Med J*. 2009;43(3):115-121.
14. Lawoyin TO, Osinowo H, Babatunde M, et al. Family planning in rural Nigeria: A study among men. *Afr J Med Med Sci*. 2002;31(2):159-162.
15. Oyediran KA, Ishola GP, Feyisetan BJ. Factors affecting ever-married men's contraceptive knowledge and use in Nigeria. *J Biosoc Sci*. 2002;34(4):497-510.
16. National Population Commission (NPC) [Nigeria] and ICF International, ed. *Nigeria demographic and health survey 2013.* . Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International.; 2014.
17. Duze MC, Mohammed IZ. Male knowledge, attitude, and family planning practices in Northern Nigeria. *Afr J Reprod Health*. 2007;10(3):53-65.
18. Stover J, Ross J. How increased contraceptive use has reduced maternal mortality. *Matern Child Health J*. 2010;14(5):687-695.
19. Tsui AO, McDonald-Mosley R, Burke AE. Family planning and the burden of unintended pregnancies. *Epidemiol Rev*. 2010;32(1):152-174. doi: 10.1093/epirev/mxq012 [doi].
20. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: An analysis of 172 countries. *The Lancet*. 2012;380(9837):111-125.
21. Hogan MC, Foreman KJ, Naghavi M, et al. Maternal mortality for 181 countries, 1980–2008: A systematic analysis of progress towards Millennium Development Goal 5. *The Lancet*. 2010;375(9726):1609-1623.
22. World Health Organization. *Trends in maternal mortality: 1990 to 2010: WHO, UNICEF, UNFPA and the world bank estimates*. World Health Organization; 2012.
23. Asekun-Olarinmoye E, Adebimpe W, Bamidele J, Odu O, Asekun-Olarinmoye I, Ojofeitimi E. Barriers to use of modern contraceptives among women in an inner city area of Osogbo metropolis, Osun state, Nigeria. *Int J Womens Health*. 2013;5:647-655. doi: 10.2147/IJWH.S47604 [doi].
24. Ankomah A, Anyanti J, Oladosu M. Myths, misinformation, and communication about family planning and contraceptive use in Nigeria. *Open Access Journal of Contraception*. 2011;2:95-105.
25. Orji EO, Onwudiegwu U. Contraceptive practice among married market men in Nigeria. *East Afr Med J*. 2003;80(7):357-360.
26. National Population Commission Nigeria, ed. *2006 census: Population distribution by sex,state, LGA and senatorial district.* ; 2006. National Population Commission, ed. ; No. 03.
27. Kotrlik, Joe W Kotrlik Joe W, Higgins C. Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information technology, learning, and performance journal*. 2001;19(1):43.
28. Cochran WG. *Sampling techniques*. John Wiley & Sons; 2007.
29. Mbizvo MT, Bassett MT. Reproductive health and AIDS prevention in Sub-Saharan Africa: The case for increased male participation. *Health Policy Plan*. 1996;11(1):84-92.
30. Ijadunola MY, Abiona TC, Ijadunola KT, Afolabi OT, Esimai OA, OlaOlorun FM. Male involvement in family planning decision making in Ile-Ife, Osun state, Nigeria. *Afr J Reprod Health*. 2011;14(4).