



ORIGINAL ARTICLE

Predictors of the usage of contraceptive implants among women of reproductive age in Ondo State, Southwest Nigeria

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Keywords:

Birth control • Contraceptive implant utilization • Counseling • Women • Nigeria

Summary

Background. A major characteristic of all developing countries is rapid population growth which is due to high fertility, birth rates and poor utilization of contraceptive methods. This study therefore assessed the predictors of contraceptive implants utilization among women of reproductive age in Ondo State, Nigeria.

Methods. A descriptive cross-sectional study design was used and a total of 230 women were selected by multi-stage sampling technique. Questionnaire administration was interviewer-based majority of the women could not read. Data analysis was conducted using SPSS version 23. Research questions and hypotheses were answered and tested with descriptive statistics (frequency, percentages), chi-square test of significance and binary logistic regression. Levels of significance was set at $p \leq 0.05$.

Results. The prevalence of contraceptive utilization (any method) and contraceptive implant utilization were 92.2% and 31.1% respectively. Variables such as education ($\chi^2 = 6.91$, $p = 0.03$)

and lack of counseling from providers ($\chi^2 = 5.05$, $p = 0.03$) were significantly associated with the utilization of contraceptive implant. These two variables were also the predictors of contraceptive implant utilization. Women with secondary and tertiary education have higher odds of utilizing contraceptive implants ($OR = 1.21$, 95% $CI = 1.01-7.82$, $p = 0.04$) and ($OR = 2.53$, 95% $CI = 1.49-11.47$, $p = 0.03$) compared to women who had primary or no education while those who claimed to be adequately counseled by providers are about two times more likely to use contraceptive implants ($OR = 2.33$, 95% $CI = 1.08-5.51$)

Conclusion. This study showed the important role of education and health workers in providing information about contraceptive implants. Therefore, health workers' knowledge of family planning counseling and services should be constantly upgraded so as to improve their roles in educating, mobilizing, counseling the women regarding contraceptive implant insertion.

Introduction

Contraceptive implants are one of the most effective family planning methods available, well-accepted worldwide [1]. According to worldwide estimates, some 600,000 women die each year of pregnancy-related causes, and 75,000 die following unsafe abortions. At least 200,000 of these maternal deaths are attributable to the failure or lack of contraceptive services [2]. Maternal Mortality is a challenge in developing countries linked with high fertility, birth rates and poor utilization of contraceptive methods. In Nigeria, maternal and infant mortality is still high. The unmet need for contraception is the leading cause of death among women of reproductive age (15-49) [3]. Findings revealed introduction of implants because women have reported various suitable contraceptive methods but not effective [4].

These implants have become popular and in high demand in many countries including sub-Saharan Africa because of their advantages such as being less conspicuous, easier to insert and remove. Contraceptive Implants such as Implanon and Jadelle are long term hormonal contraceptive implants and a better option for women due to its effectiveness and convenience [5]. This is because of its numerous health benefits to women and their

families such as preventing unintended pregnancies, promoting healthy birth spacing, reducing lifetime risk of maternal deaths, and enhancing attainments of goals [6]. Also, Contraception is immediate if inserted within the first seven days of menstrual cycle, or within the first five days for Implanon. There is no delay in return to fertility. They offer continuous, long-term protection. Also, effective within 24 hours of insertion. Implants do not affect breastfeeding [1].

There are research evidences identifying the various factors that contribute to the low utilization of contraceptive use in Nigeria, with the most common factor being the myth about the side effects of modern contraceptives [7]. However, studies have revealed persistent low coverage and observed wide variations for contraceptive use, despite the increasing adoption of contraceptives in Nigeria. The use of contraceptives especially implant utilization though is most accepted worldwide is not well utilized in developing countries. According to Gebre-Egziabher et al. [8] study revealed Health extension workers were the primary source of information on Implanon, a significant number of women had incorrect information regarding Implanon. Hence, it was recommended that health extension workers and other health professionals should provide appropriate counseling and

education regarding Implanon and other contraceptives in which they play a major role in information and service provision of Implanon. The Federal Government of Nigeria has a target of 36% contraceptive prevalence rate in 2018 [7]. The use of contraceptive implant may help to achieve this target as the duration of effectiveness is quite long. Also, due to inadequate utilization of implants in developing countries, there is an urgent need to determine factors influencing contraceptive implants utilization among childbearing women in Ondo State Nigeria. Also, this study was designed to examine the predictors of contraceptive Implants utilization among women of reproductive age in the Selected Local Government Areas of Ondo State.

Materials and methods

This cross-sectional study was conducted in Ondo State, Nigeria, study period was from November 2017 to August 2018, data collection took place from July to August 2018. Sample size was calculated at the 0.95 confidence level (1.96), and given that, the prevalence of contraceptive implant utilization is 16% (7) as well as 5% chance of loss, a total of 230 participants were selected after adjusting for no-response rate. Women aged between 15-49 years who were attending family planning clinics in the State during the study period were invited to participate. Participants' selection was by the multi-stage sampling technique. First, six out of the 18 LGAs in the State were randomly selected. All the facilities rendering family planning services in each the 6 LGAs were listed and second-stage selection was done through systematic random sampling. The number of participants from each facility was determined proportionally to the population it covers.

The questionnaire was validated by scrutinizing for face and content validity. This was achieved through the use of relevant literature and by presenting the questionnaire to researcher's supervisor, statistician and other research experts who help to review the items on the questionnaire in order to improve sentence construction, clarity and the suitability of items.

RELIABILITY

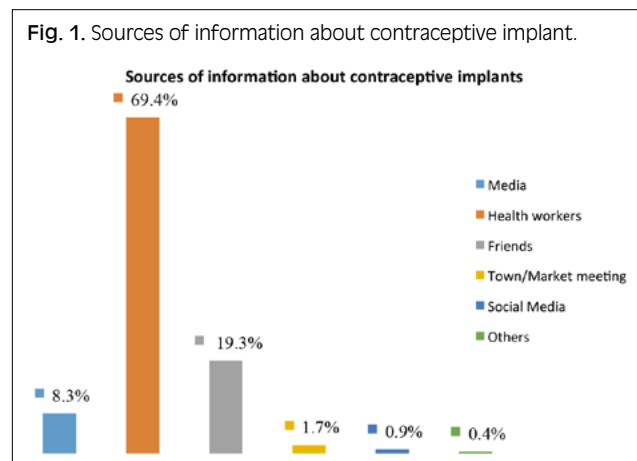
The reliability of this instrument was done conducting a pre-test method whereby few questionnaires were distributed to participants in the family planning clinic of Akure North primary health care Local Government Area of Ondo State in which 10% of sample size respondent was selected. Informed consent was taken and data from the retrieved questionnaire was coded, organized and analyzed to determine the internal consistency of the instrument. The Cronbach Alpha was calculated. A reliability of greater than or equal to 0.7 was considered satisfactory or acceptable for this instrument. The values of correlation coefficients of the questionnaire were 0.79. Participants who consented to participate in the study were allowed to fill the questionnaire (Appendix 1). The questionnaire consisted of two sections,

the first collected information on the participants' socio-demographic characteristics (9 items) while the second section included questions about the utilization of contraceptive implants (20 items). Statistical analysis of the data collected was done through SPSS version 23. The mean and standard deviation (SD) were calculated for quantitative variables (e.g. age) while frequencies and percentages were obtained for categorical variables. The women were asked about the types of family planning they have ever used. Those who stated to have used contraceptive implants were coded as 'yes' meaning utilization of contraceptive implants while those who used other methods were coded as 'no'. Possible associations between utilization of contraceptive implants and the socio-demographic/economic and other explanatory variables were tested by means of the chi-square method. Variables that were significant at 20% with Chi-square were moved into the logistic regression model. Level of Statistical significance was set at $p \leq 0.05$ on two-tailed tests.

Results

A total of 230 women of child bearing age assessing family planning clinics in Ondo State were selected for this study. The mean age was 30.9 ± 6.8 years. More than 80% were married and belonged to the Yoruba tribe. About two-third (63.9%) were Christians while others practiced Islamic religion (36.1%). The educational status of the respondents was moderately high with 45.7% and 40.4% having completed secondary and tertiary levels respectively. Occupation-wise, majority were traders (60.0%), civil servants (23.0%) or students (10.4%). About 40.0% have had 1-2 children, 45.8% had 3-4 children and 14.4% have previously had more than 4 children. The mean age at first delivery and marriage were 24.0 ± 4.2 and 23.0 ± 4.4 years respectively (Tab. I). The major source of information about contraceptive implants were health workers (69.4%) friends (19.2%) and media (8.3%) (Fig.1)

The prevalence of contraceptive utilization (any method) and contraceptive implant utilization were 92.2% and



Tab. I. Socio-demographic characteristics of the respondents.

Variables	Frequency	Percentage
Age (years)		
≤ 29	106	46.1
30-39	90	39.1
40-49	34	14.8
Mean ± SD		30.9 ± 6.8
Tribe		
Yoruba	185	80.4
Hausa	16	7.0
Ibo	29	12.6
Marital status		
Single	16	7.0
Married	199	86.5
Divorced	15	6.5
Religion		
Christianity	147	63.9
Islam	83	36.1
Education		
Primary/None	32	13.9
Secondary	105	45.7
Tertiary	93	40.4
Occupation		
Civil servant	53	23.0
Student	24	10.4
Trading	138	60.0
Others	15	6.6
Number of children		
1-2	86	39.8
3-4	99	45.8
> 4	31	14.4
Age at first delivery (years)		
≤ 24	111	52.6
25-29	80	37.9
≥ 30	20	9.5
Mean ± SD		24.0 ± 4.2
Age at marriage (years)		
≤ 24	138	65.4
25-29	56	26.5
≥ 30	17	8.1
Mean ± SD		23.0 ± 4.4

31.1% respectively. Other types of contraceptive methods that had been used by the participants were condom (27.8%), pills (19.8%), injectables (16.0%) and female sterilization. About two-thirds have been using contraceptives for the past three months. The major reasons for changing or stopping contraceptive use were husband’s disapproval (45.1%) and side effects (56.4%) respectively while the major reasons for current usage of any contraceptive implants were its effectiveness in offering long term protection (54.5%) (Tab. II), the desire to have good maternal health and satisfaction with information given on insertion procedure and services rendered by the healthcare provider. However, some (< 45%) were afraid of pain, side effects and menstrual abnormalities, and have husbands who disapproves it’s use (Tab. III). Education was significantly associated with the utilization of contraceptive implant. Utilization of contraceptive implants was significantly lower in women with primary or no education (18.8%) compared with those who had secondary (37.1%) and tertiary (22.6%) education

Tab. II. Utilization of contraceptive methods.

Variables	Frequency	Percentage
Contraceptive method ever utilized		
Pills	42	19.8
Injectable	34	16.0
Implants	66	31.1
Condom	59	27.8
Female sterilization	11	5.2
Duration of use of the method		
One month	24	11.9
Two months	42	20.8
Three months	44	21.8
Three years	51	25.3
Five years	41	20.3
Reason for changing contraceptive method		
Side effects	57	28.2
Husband disapproval	91	45.1
Others	54	26.7
Reason for stopping contraceptive use		
Expensive	18	8.9
Side effects	114	56.4
Others	70	34.7
Reason for contraceptive use		
Reversible	32	15.8
Effective and long term protection	110	54.5
Easily available	26	12.9
Convenient to use	34	16.8

($\chi^2 = 6.91, p = 0.03$) (Tab. IV). Also, significant relationship was found to exist between the lack of counseling from providers and utilization of contraceptive implant. Women who were counseled by health care providers (33.7%) utilized contraceptive implants more than those who did not get counseling (17.9%) and this association was statistically significant ($\chi^2 = 5.05, p = 0.03$) (Tab. V). Multivariable analysis also revealed that only education and lack of counseling from providers were significant predictors of contraceptive implant utilization. Women with secondary and tertiary education have higher odds of utilizing contraceptive implants (OR = 1.21, 95% CI = 1.01-7.82, $p = 0.04$) and (OR = 2.53, 95% CI = 1.49-11.47, $p = 0.03$) compared to women who had primary or no education while those who claimed to be adequately counseled by providers are about two times more likely to use contraceptive implants (OR = 2.33, 95% CI = 1.08-5.51) as shown in Table VI.

Discussion

This study therefore assessed the predictors of contraceptive implant utilization among women of reproductive age group in Ondo State, South-West Nigeria, with a view to make appropriate recommendations that will enhance the uptake of family planning services. This study carried out among the women of reproductive age group in Ondo State showed that the highest

Tab. III. Reason for Utilization of contraceptive implants.

Items	Yes (%)	No (%)
I need motivation to accept contraceptive implant	131 (59.0)	91 (41.0)
I need to inform my husband to enhance acceptance	125 (56.3)	97 (43.7)
I desire good maternal health	187 (84.2)	35 (15.8)
I am satisfied with information on procedure of insertion	204 (92.7)	16 (7.3)
I am satisfied with services rendered by the healthcare provider	185 (83.3)	37 (16.7)
I desire to stop child bearing by considering contraceptive implant	145 (65.3)	77 (34.7)
Fear of side effects	108 (48.6)	113 (51.4)
I am not willing to use contraceptive Implant	73 (32.9)	149 (67.1)
Desire to have more children	101 (45.5)	121 (54.5)
Afraid of pain	100 (45.0)	122 (55.0)
Menstrual abnormalities	98 (44.1)	124 (55.9)
Need to change contraceptive methods	87 (44.1)	135 (60.8)

Tab. IV. Associations between socio-demographic characteristics and utilization of contraceptive implants.

Variable	Utilization		χ^2	p value
	Non users (%)	Users (%)		
Age (years)				
≤ 29	78 (73.6)	28 (26.4)	1.21	0.55
30-39	64 (71.1)	26 (28.9)		
40-49	21 (63.3)	12 (36.4)		
Tribe				
Yoruba	133 (71.9)	52 (28.1)	2.40	0.30
Hausa	11 (68.8)	5 (31.3)		
Ibo	20 (69.0)	9 (31.0)		
Marital status				
Never married	14 (87.5)	2 (12.5)	2.20	0.16
Once married	150 (70.1)	64 (29.9)		
Religion				
Christianity	102 (69.4)	45 (30.6)	0.73	0.45
Islam	62 (74.7)	21 (25.3)		
Education				
Primary/None	26 (81.3)	6 (18.8)	6.91	0.03
Secondary	66 (62.9)	39 (37.1)		
Tertiary	72 (77.4)	21 (22.6)		
Occupation				
Civil servant	37 (69.8)	16 (30.2)	1.71	0.64
Student	16 (66.7)	8 (33.3)		
Trading	102 (73.9)	36 (26.1)		
Others	9 (60.0)	6 (40.0)		
Number of children				
1-2	57 (66.3)	29 (33.7)	3.24	0.20
3-4	75 (75.8)	24 (24.2)		
> 4	19 (61.3)	12 (38.7)		
Age at first delivery (years)				
≤ 24	80 (72.1)	31 (27.9)	0.92	0.63
25-29	53 (66.3)	27 (33.8)		
≥ 30	13 (65.0)	7 (35.0)		
Age at marriage (years)				
≤ 24	98 (71.0)	40 (29.0)	1.12	0.57
25-29	38 (67.9)	18 (32.1)		
≥ 30	10 (58.8)	7 (41.2)		

age group of respondents was in the range 15-29 years. This trend was also found in a community-based study where about half of respondents surveyed were in this age range [13]. The mean age obtained in this study was also close to that obtained from a study conducted at Ibadan [14], another city in South-West, Nigeria. Ap-

proximately, eight out of every ten respondents in this study were married.

According to previous studies, contraception prevalence rate among women was in the range of six to seven for every ten respondents that were married [13-15]. However, other studies carried out among rural women

Tab. V. Associations between other explanatory variables and utilization of contraceptive implants.

Variable	Utilization		χ^2	p value
	No	Yes		
Lack of counseling from providers				
Yes	46 (82.1)	10 (17.9)	5.05	0.03
No	110 (66.3)	56 (33.7)		
Religious opposition				
Yes	63 (75.9)	20 (24.1)	2.01	0.16
No	93 (66.9)	46 (33.1)		
Cultural beliefs				
Yes	70 (75.3)	23 (24.7)	1.91	0.17
No	86 (66.7)	43 (33.3)		
Limited knowledge about methods				
Yes	60 (70.6)	25 (29.4)	0.01	0.94
No	96 (70.1)	41 (29.9)		
Desire for more children				
Yes	74 (71.8)	29 (28.2)	0.23	0.63
No	82 (68.9)	37 (31.1)		
Associated medical illness				
Yes	27 (81.8)	6 (18.2)	2.47	0.12
No	129 (68.3)	60 (31.7)		

Tab. VI. Predictors of the utilization of contraceptive implants.

Variables	Odds Ratio	95% CI	p-value
Marital status			
Never married	1		
Once married	2.74	0.96-7.82	0.06
Education			
Primary/Never	1		
Secondary	1.21	1.01-7.82	0.04
Tertiary	2.53	1.49-11.47	0.03
No of children			
1-2	1		
3-4	0.58	0.29-1.15	0.12
> 4	1.77	0.67-4.63	0.25
Lack of counseling from providers			
Yes	1		
No	2.33	1.08-5.51	0.05
Religious Opposition			
Yes	1		
No	0.92	0.34-2.47	0.87
Cultural beliefs			
Yes	1		
No	1.53	0.60-3.88	0.37
Associated medical illness			
Yes	1		
No	1.41	0.49-4.11	0.52

in Ikeji Arakeji, south-western part of Nigeria [16] and among women attending antenatal clinic in Uyo, southern part of Nigeria [17] showed a higher percentage of respondents to be married (97.1% and 93.7%, respectively). These higher percentages, compared to our study, may be due to the fact that the Ikeji Arakeji study was carried out among rural women, and the majority of women in the reproductive age group being married is an indicator of a rural environment [16] the Uyo study was carried out among antenatal attendees who were pregnant and were also expected to be married.

In this study the prevalence of contraceptive implant utilization was 31.1%, this was much higher than the 10.1% reported in a study conducted in Ethiopia [8] Contraceptive implant appears to be a less attractive option for a fairly large proportion of women in some other parts of Nigeria, Africa and the world compared to this current study. The overall prevalence use of Implanon was 18.6% in Southern Nigeria [18] 7% and 3.6% in Western Nigeria [19, 20] 16.0% in South Africa, 1.9% in Uganda [21], 4.8% in Singapore [22] and 22% in rural Pakistan [23]. The differences in the uptake of contraceptive implants in other research in contrast to this

study could be attributed to factors such as study settings, sample sizes, religions and marital status.

In this study, the major predictors of utilisation of contraceptive implants were education and lack of counseling from providers unlike in other studies where age, religion, residence, education, ethnicity, and media exposure to family planning [24] and number of living children and number of modern contraceptives known [8] as significant predictors of current use of contraceptive methods.

Participants with higher education preferred contraceptive implants and had higher odds of using it compared with those who had lower education. The potential reason for this finding may be that respondents with secondary and tertiary education levels were able to manage information correctly and are aware of the advantages of using implants as a contraceptive, namely its convenience, and that it does not require compliance and repeat visits to health facilities. We also found that proper counseling by health workers led to higher odds of contraceptive implant utilization among the women. Therefore, health workers' knowledge of family planning counseling and services should be constantly upgraded to improve their roles in educating, mobilizing, counseling the women regarding contraceptive implant insertion.

LIMITATIONS

This study has important limitations. First, the design is cross sectional in nature. Therefore, it may be difficult to confirm a cause-effect relationship. Moreover, the women selected for this study were found in health facilities. Also this study may lack external validity and the findings may not be applicable to women in other geographical locations

Conclusions

This study showed implications for the development of effective family planning programs that encourage contraceptive adherence, especially targeting specific groups like the male partner and religious leaders. Programs should help build self-efficacy of women through multi-sectorial approaches that empower women to discuss their family planning concerns. This study also revealed the important role of health workers in providing information about contraception. Therefore, their knowledge of family planning counseling and services should be constantly upgraded to improve their roles in educating, mobilizing, counseling, and providing contraceptive implant insertion and this will ultimately improve its utilization by women. This study also revealed that high level of awareness did not translate to high contraceptive implant use. In light of the advantages associated with contraception use, there needs to be a conscious effort, especially among health care workers, to educate women about contraception and encourage its use.

Ethical statement

All the participants recruited gave consent. Participation in the study was voluntary and the participants were told they could withdraw from the study at any time if they feel so. Information gotten from the study participants were kept confidential. Also, the participants were not exposed to any form of harm. The study was approved by the Ethics Committee of the Ondo State Ministry of Health with protocol no OSHREC/09/07/18/054.

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Conflict of interest statement

The authors declare no conflict of interest.

Authors' contributions

OO, CN conceived and designed the study, OO collected data for the study, CN supervised the conduct of the study, PIA, contributed to the study design and sampling methodology, analyzed the data and presented its findings. All authors read and approved the last version.

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Appendix 1

QUESTIONNAIRE

PREDICTORS OF CONTRACEPTIVE IMPLANTS UTILIZATION AMONG WOMEN OF REPRODUCTIVE AGE IN ONDO STATE, SOUTHWEST NIGERIA

SECTION A: SOCIO - DEMOGRAPHIC CHARACTERISTICS

Instruction: Fill in or tick as appropriate in the spaces provided

1. Age (at last birthday) : _____ years
2. Tribe: a. Yoruba () b. Hausa () c. Ibo () d. Others (specify) _____
3. Marital Status: a. Single () b. Married () c. Divorced () d. Separated () e. Widow ()
4. Religion: a. Christianity () b. Islam () c. Others _____
5. Educational Qualification: a. No Formal Education () b. Primary () c. Secondary () d. Tertiary () e. Others (specify) _____
6. Occupation: a. Civil Servant () b. Student () c. Trading () d. Others (specify) _____
7. Number of Children (Alive?) _____
8. Age at first delivery _____
9. Age at marriage _____

SECTION B: UTILIZATION OF CONTRACEPTIVE IMPLANTS

Instruction: Please tick as appropriate in the spaces provided.

10. Have you ever utilized any contraceptive methods, what type ever used a. Pills () b. Injectable () c. Implants () d. Condom () e. Female sterilization () f. Vasectomy ()
11. Duration of contraceptives methods ever used a. one month () b. two months () c. three months () d. three years () e. five years () f. specify _____
12. Reason to change contraceptive method a. side effects () b. husband disapproval () c. specify other reasons _____

13. Reason to stop contraceptive use **a.** expensive () **b.** side effects () **c.** specify other reasons _____
14. Reason for contraceptive implant use **a.** reversible () **b.** effective and long term protection () **c.** easily available **d.** convenient to use ()
15. Reason for preference of Contraceptive use **a.** expensive () **b.** side effects () **c.** specify _____
16. Reason for not currently using Contraceptive implants **a.** use of other methods () **b.** desire for more children () **c.** medical reason () **d.** religion () **e.** Unmarried

S/N	ITEMS	Yes	No
17	I need motivation to accept contraceptive implant		
18	My husband disapproves its use		
19	I desire good maternal health		
20	Fear of side effects		
21	I desire to stop child bearing by considering contraceptive implant		
22	I am satisfied with information on procedure of insertion		
23	I am satisfied with services rendered by the healthcare provider		
24	I am not willing to use contraceptive Implant		
25	I need to inform my husband to enhance acceptance		
26	Desire to have more children		
27	Afraid of pain		
28	Menstrual abnormalities		
29	Ever change contraceptive methods		