

Prevalence and Determinants of Intrauterine Contraceptive Device Uptake among Childbearing Age Women in Nigeria: A Cross-Sectional Study

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ABSTRACT

OBJECTIVE: To investigate the prevalence and determinants of intrauterine contraceptive device (IUCD) uptake among childbearing-age women in Northern Nigeria.

METHODOLOGY: A cross-sectional study was employed among 278 childbearing-age women attending a family planning clinic at Wudil General Hospital in Kano State, Nigeria, from June to August 2022. A nonprobability purposive sampling technique was used to recruit participants. The study included women of childbearing age who were within the reproductive years (18 years and above), have conceived at least once, are still reproductive, and wish to delay future pregnancy for at least a year. The study excluded women with primary or secondary infertility who were confirmed pregnant at the study time and had possible cognitive impairment. Data was collected using a self-administered questionnaire. The data were analyzed by using SPSS software version 25.0.

RESULTS: The prevalence of IUCD uptake among participants was 23.0%. There were significant differences in IUCD uptake with the number of children and pregnancies, with women having five or more children being five times more likely to use an IUCD. The univariate logistic regression model test showed a significant association between IUCD uptake and the number of pregnancies but not with other factors, including perceived social support.

CONCLUSION: IUCD uptake was significant among women who had five or more children. Involving substantial others like husbands, family members, and peers in the issue of IUCDs as a contraceptive method will still help promote the uptake even though perceived social support was found not to be significant.

KEYWORDS: Contraception, contraceptive agents, family planning services, intrauterine devices, pregnancy, childbearing age

INTRODUCTION

Maternal mortality is one of the distressing problems in most developing countries, putting the lives of mothers and their babies at stake, especially in the Sub-Saharan countries, with West African countries having the highest prevalence¹. It was estimated that of all the overall maternal mortality, 14% occurs in Nigeria². Despite several efforts by many leading countries to end this problem, the issue is still overwhelming in some parts of the world. Many international committees have proposed several measures to address the maternal mortality rate through different initiatives, including family planning. The recent actions were to ensure universal access to sexual and reproductive healthcare services, including family planning, information and education, and the integration of reproductive health into national strategies and programs by 2030, as reported in the United Nations Sustainable Development Goals Extended Report 2024³. Maternal mortality in Africa is not an exception, with Nigeria being one of the worst African countries⁴. Nigeria is Africa's most populous, fastest-growing country and the seventh in the world⁵. With 176 million people in 2014 and 183 million in 2015, the Nigerian population has doubled from 1990 to 2019 and will reach about 233 million people in 2024⁶. Nigeria is projected and estimated to be the second most populous country in the world, apart from Pakistan, with a population of about 376 million people, exceeding the United States projected population of 384 million, and the Democratic Republic of Congo, with 238million inhabitants by the year 2054⁶. Nigeria is second to India in terms of maternal mortality, with an estimated 60,000 maternal deaths annually, with the northern part of Nigeria having the worst digits⁷.

In response to these maternal mortality problems and their sequelae, as well as the high population issue, the Nigerian government implemented a national population policy in 1989 that called for a reduction in the birth rate through voluntary fertility regulation methods⁸. This policy was revised in 2004 and aimed to reduce maternal mortality by 75%, the fertility rate by 0.6 children per woman every five years, and a 2% annual increase in the proportion of women using contraceptives by the year 2015². Unfortunately, the policy did not meet this aim. Following the London Summit 2012 regarding Family Planning, Nigeria set a family planning blueprint of upgrading the national contraceptive prevalence rate to 36% by 2018⁹ and 27% by 2020. Yet, all the targets were not met due to several barriers¹⁰. However, the recent report of the NDHS shows an increase in modern contraceptive use from 6% in 1990 to 20% in 2023/24, which donates a rise from 4% to 15%. Despite the high awareness, knowledge, and benefits of family planning, Sub-Saharan Africa has the lowest percentage of modern family planning methods used globally¹¹, with a prevalence of 56%. Whereas in Nigeria, the prevalence of contraceptive use was 12%^{10,12}.

An intrauterine contraceptive device (IUCD) is a long-term, reversible, effective family planning method. An IUCD is a small contraceptive device inserted into the uterus. Once inserted, it offers about 10-12 years of spacing or limiting pregnancy for its users regardless of parity and health status, like HIV/AIDS clients¹³. As of 2012, IUCDs are the most widely used and effective form of long-term reversible contraception, with more than a 180million users worldwide¹⁴. Failure rates for copper IUCD are about 0.8%.

In comparison, levonorgestrel has a failure rate of 0.2% in the first year of use. However, IUCD utilization in Nigeria was only 0.8%¹⁵. Northwest Nigeria has the lowest utilization of IUCD compared to other areas, with Kano state having 0.0%¹⁵. Currently, Nigerian women primarily use implants (5.6%) and short-term modern contraceptives such as injectables (3.8%)¹⁵. They are less interested in long-acting reversible contraceptives (LARC) such as IUCDs. Traditional beliefs, religious barriers, fear of side effects, misconceptions and myths, provider's influence,

and lack of decision-making power or partner's involvement have contributed significantly to the underutilization of LARC, especially IUCD in these parts of the country¹⁵⁻¹⁷. Hence, have a significant effect on the contraceptive prevalence rate in a low-resource setting such as Nigeria. Perceived social support also plays a vital role in helping women seek family planning services. Most decisions are made by the husbands or the senior member of the family, including the mother-in-law, the father-in-law, or anyone who has a say in the family^{12,16,18}. According to the NDHS (2023/2024), only 29% of currently married women can make informed decisions regarding their family planning choice, among which those with educational background make the highest decision (58%) and those without any academic background with just 9%. As of 2016, the prevalence of IUCD use in Kano was 7.5% when compared to injectables at 47.8% and pills at 24.0%. In 2017, IUCD usage increased to 12.8%, but it is still the least-used contraceptive as compared to injectables at 39.6% and pills at 20.5%². This underutilization and the slow increase in IUCD uptake trends require further investigation. In addition, to the best researchers' knowledge, limited earlier studies measure the prevalence and relationship between perceived social support and IUCD uptake in the Northern part of Nigeria. Therefore, this study aimed to determine the prevalence and determinants of IUCD uptake among women of childbearing age in Nigeria.

METHODOLOGY

This quantitative, cross-sectional study was conducted at the Kano State, Northern Nigeria, family planning clinic from June to August 2022. The sample size was determined using G*power software (version 3.1). Assuming a small effect size of 0.2 (Cohen's d), a statistical power of 0.95 ($1-\beta$), and an alpha level of 0.05 (two-tailed test), the required sample size for the study was calculated to be 272 participants. However, we collected data from 278 participants who met the study inclusion criteria. This study used a nonprobability purposive sampling technique to recruit participants. The included participants were childbearing-age women who attended a family planning clinic in the local government area of Wudil LGA, at Kano State, Nigeria, who voluntarily participated in the study, women of childbearing age who are within the reproductive years (18 years and above), have conceived at least once, are still reproductive, and wish to delay future pregnancy for at least a year. The exclusion criteria were women with primary or secondary infertility who were confirmed pregnant at the study time and had possible cognitive impairment (Mini-Mental State Examination score less than 24).

A self-administered questionnaire was adapted from different studies^{19,20} comprising closed-ended questions and a Likert scale. Five questions related to the sociodemographic characteristics of participants, and six questions measured the data on contraceptives used and IUCD uptake among childbearing-age women. The validity and reliability of the instrument were tested during a pilot study among 30 patients at Kura General Hospital, Kano State. Cronbach's alpha value for this instrument was 0.88, which is considered acceptable. The scale content validity index (S-CVI) was calculated, and findings (0.90) indicate that the items were highly relevant to the assessment construct²¹.

The study underwent ethical consideration, where the UiTM ethical committee granted permission to conduct the research work on the 26th of April 2019 with reference number 600-IRMI (5/1/6). Approval was also given by the Kano State Ministry of Health ethical committee in Nigeria on the 23rd of May 2019, with reference number MOH/Off/797/T.I/1251. Permission was also sought from the management of Wudil General Hospital and, at the same time, from the matron of the family planning clinic before the commencement of the data collection process. The assistant researcher approached the participants, provided them with an information leaflet, explained the objectives and significance of the study, and gave them the information/consent form to fill out.

Participants were chosen best on the consent form, and those who met the inclusion criteria were included. The participants were informed that their participation is voluntary and they can withdraw from the study whenever they wish. Confidentiality of their responses and anonymous presentation of findings was ensured, and questionnaires were administered and filled up within 15-20 minutes for one month (1st to 30th June). The importance of responding completely to the questionnaires was emphasized. Filled questionnaires were retrieved, coded, and preceded to analysis using SPSS.

Perceived social support was operationalized using the Hausa version of the Multidimensional Scale of Perceived Social Support Index. The questionnaire has 12 items graded on a 7-point-Likert scale, ranging from 1 (very strongly disagree) to 7 (very strongly agree), with a higher score indicating high perceived social support. In a previous local study, the Cronbach alpha value of this scale was 0.78. In the current study, the α value was 0.88, considered acceptable.

Statistical analysis was performed using SPSS program version 25.0. Descriptive statistics were calculated, including frequency, mean, and standard deviation for sociodemographic characteristics, contraceptive uptake, and level of perceived social support. Univariate analysis

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Chi-square test was used to identify the relationship between the IUCD uptake and their sociodemographic characteristics (age, educational level, employment status, number of pregnancies, and number of children). Finally, a univariate logistic regression analysis was used to predict the factors contributing to the IUCD uptake with a p-value <0.25 to identify the significant predictors for IUCD uptake. A p-value of less than 0.05 was considered statistically significant, with a confidence interval of 95%.

RESULTS

Two hundred seventy-eight questionnaires were distributed to women of reproductive age who met the inclusion criteria at the family planning clinic, with a 100% response rate. The participants' sociodemographic characteristics are shown in **Table I**, and the attributes of contraceptive use and IUCD uptake among childbearing-age women are shown in **Table II**. The result showed that the prevalence of IUCD uptake was 23.0% (n=64). Whereas the remaining 77.0% (n=214) were not using IUCD as their contraceptive method of birth spacing or limiting. For the perceived social support level, the total mean score was 66.06 (SD=5.72), with the highest support from family members (M=22.32, SD=2.00) and the least support from friends (M=21.84, SD=2.00).

Table I: Sociodemographic characteristics of childbearing-age women

Characteristics	Number of subjects (n)	Frequency (%)
Age		
15-24	62	22.3
25-34	111	39.9
35-44	84	30.2
45 >	21	7.6
Educational level		
None	20	7.2
Primary School	58	20.9
Secondary School	168	60.4
College/University	32	11.5
Employment Status		
Working	84	30.2
Not working/Housewife	194	69.8
Number of Children		
1 to 4	224	80.6
More than 5	54	19.4
Number of Pregnancy		
1 to 2	62	22.3
3 to 4	122	43.9
5 to 6	62	22.3
More than 6	32	11.5

Table II: Characteristics of contraceptive used and IUCD reuptake among childbearing women

Variables	Number of subjects (n)	Frequency (%)
Information about contraceptive		
Media	41	14.7
Health care provider	135	48.6
peers and friends	34	12.2
School	57	20.5
Others	11	4.0
Type of contraceptive used		
IUCD (Copper T)	64	23.0
Others	214	77.0
Ever used IUCD before		
Currently using	64	23.0
Previously used	115	41.4
Never used	99	35.6
Reason for choosing IUCD		
Side effects of other methods	13	20.3
Provider influence	4	6.3
To avoid hormonal contraceptives	47	73.4
Duration using IUCD		
0-4 years	31	48.4
5-8 years	29	45.3
9-12 years	4	6.3
Reason for never using IUCD		
My partner opposed	30	30.3
Provider suggested other methods	28	28.3
Satisfied with the current method	39	39.4
Others	2	2.0

The associations between sociodemographic characteristics and IUCD uptake reveal several relationships (**Table III**). The results showed significant differences in the number of children ($\chi^2=9.22, p=0.01$) and the number of pregnancies ($\chi^2=6.49, p=0.04$) with IUCD uptake.

Table III: Summary of the chi-square test results of sociodemographic characteristics with IUCD uptake

Variables	Respondents	IUCD		χ^2	p-value
		Yes	No		
Age					
15-24	62	16	46	3.38	0.06
25-34	111	30	81		
35-44	84	15	69		
45 and above	21	3	18		
Educational Level					
None	20	5	15	0.71	0.25
Primary school	58	15	43		
Secondary school	168	38	130		
College/University	32	6	26		
Employment Status					
Working	84	18	66	0.17	0.40
Not working/Housewife	194	46	148		
No of Children					
1 to 4	224	60	164	9.22	0.01*
More than 5	54	4	50		
No of Pregnancy					
1 to 2	62	16	46	6.49	0.04*
3 to 4	122	31	91		
5 to 6	62	15	47		
More than 6	32	2	30		

*Significant at $p < 0.05$

Table IV summarizes the logistic regression analysis for this study. The results showed that the number of children significantly predicted IUCD intake ($p= 0.01$). Women with more than five children were five times more likely to use IUCD than those with one to four children. However, other sociodemographic characteristics and perceived social support did not significantly predict IUCD uptake.

Table IV: Summary of logistic regression for factors associated with IUCD uptake among childbearing-age women

Variables	N	OR	95% CI	p-value
Age				
15-24	62	Ref		
25-34	111	1.17	0.52-2.65	0.70
35-44	84	1.62	0.59-4.42	0.35
45 and above	21	0.84	0.15-4.56	0.84
Educational Level				
None	20	Ref		
Primary school	58	0.93	0.27-3.12	0.90
Secondary school	168	1.16	0.38-3.54	0.80
College/University	32	0.59	0.13-2.59	0.49
No of Children				
1 to 4	224	Ref		
More than 5	54	5.70	1.48-21.94	0.01*
No of Pregnancy				
1 to 2	62	Ref		
3 to 4	122	0.81	0.36-1.84	0.62
5 to 6	62	0.49	0.17-1.40	0.18
More than 6	32	1.76	0.26-11.81	0.56
Total Perceived Social Support		1.05	0.99-1.11	0.08

*Significant at $p<0.05$

DISCUSSION

The prevalence of IUCD uptake in this study was 23.0%, which is promising considering that the result was from only one rural hospital. The results also showed an increase in the uptake of IUCD than the previous report by PMA/KANO. In 2016, the uptake of IUCD in the whole state was 7.5%, and 12.8% in 2017². Ten years ago, the entire country's prevalence of IUCD uptake was only 1.1%, with the southern part having the highest uptake (6.5%) and the lowest in the northern part (1.3%)^{2,22}. Similarly, another study conducted in four Northern states of Nigeria found that only 4.7% of women were using IUCD¹⁷, which was far less than the result of this study. Another study conducted in Kenya on IUCD uptake among women of childbearing age found 7.9%²⁰, which is relatively lower than the result of this study.

Contrary to another study conducted in coastal Karnataka, India. The authors reported a high prevalence of 25%²³, which is quite significant. Another survey by Moreau and Bohet²⁴ on the use of IUCD in France found that 21.4% were using it. Therefore, compared to other studies within Nigeria and some other countries, the uptake in this study is relatively high. The primary reason might be due to the current study setting, a family planning clinic, where most attendees intend to use contraceptives.

Significant differences were in the number of children and pregnancies with IUCD uptake. Given the number of pregnancies, this study found that women's experiences with pregnancy significantly differed from IUCD uptake. A study from Ethiopia also found the number of pregnancies to be statistically significant with IUCD uptake among childbearing-age women²⁴. Another study among Zambian women found parity as a vital indicator of IUCD use, with 53.5% of the participants using IUCD and more than 34.2% using the implant as their method of choice²⁵.

The findings in this study are also in line with the findings of NDHS 2013, which reported high contraceptive use among women with many children (21%). Women with three to four children use contraceptives the highest compared to those without any child (2%). Out of the 21%, only 1.7% have five and above children and were using IUCD to space or limit the next birth². A study among Zambian women found that those with four children (53.5%) and above utilized IUCD more than those using the implant²⁵. Contrarily, another study did not find the number of children was significant¹⁴. Other studies^{23,24,26} did not report the number of children as a factor affecting IUCD uptake.

At the beginning of this study, we hypothesized that the level of education is a significant predictor for IUCD uptake. However, the finding rejected this hypothesis. A study from Kenya on IUCD uptake also did not find the educational level to be a significant factor in determining IUCD uptake²⁰. Likewise, other studies worldwide did not find the educational level statistically crucial in IUCD uptake^{14,24}. However, Kebede reported that maternal education level, moderate to high knowledge, and a positive attitude toward LARC were significantly associated with greater LARC uptake²⁷.

This study also found that perceived social support did not predict IUCD uptake after controlling for sociodemographic characteristics. On the contrary, a study done among Malaysian women found that women with moderate (OR: 4.9, CI: 1.6–10.8) and strong (OR: 14, CI: 4.5–26.4) perceived social support for contraceptive uptake, in general, were more likely to use modern contraception than the women with low perceived social support²⁸. Similarly, the study on the role of social support and parity in contraceptive use among Ugandan women found that those women whose partners are in a position to make the last decision on their contraceptive use were less likely to use any method²⁹. In addition, women's perception of their peers' method of

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contraception practice was positively associated with the technique utilized among low-parity women.

However, the current study has several limitations and should be carefully considered before generalizing the findings to other populations. The study design was cross-sectional and only measured the study's phenomena at a specific time. In addition, the sample is also restricted to women attending family planning clinics to start or continue the current contraceptive; thus, a risk of bias exists. Notwithstanding its limitation, the findings provide new data regarding the prevalence of IUCD uptake and its associated factors.

CONCLUSION

In conclusion, this study has explored new information regarding modern contraceptive uptake, precisely a type of long-acting contraceptive in the northern part of Nigeria. Firstly, the prevalence of IUCD uptake was 23.0%, which is considered higher than the previous report. Regarding the relationship between perceived social support and IUCD uptake, perceived social support was insignificant to IUCD uptake. Yet, two sociodemographic factors (number of children and number of pregnancies) were found to be essential determinants of IUCD uptake.

RECOMMENDATION

Based on this study's findings, efforts to increase the uptake of IUCDs among women of childbearing age in Nigeria should focus on addressing the identified barriers and enhancing education about the benefits of this contraceptive method. Despite perceived social support not being a significant predictor in this study, engaging key influencers such as husbands, family members, and community leaders could still be crucial in promoting acceptance and reducing cultural myths and misconceptions surrounding IUCDs.

Healthcare providers and policymakers should prioritize comprehensive family planning education that includes men and highlights the safety and long-term benefits of IUCDs. Public health campaigns should also focus on correcting myths and providing clear, accessible information to women, especially those with multiple pregnancies, who were identified as more likely to adopt this method.

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AUTHOR CONTRIBUTION

Abubakar RZ: Contributed to the study's conception, design, data collection, analysis and drafting.

Mulud ZA: Supervised the overall research, including its conception, design, data analysis, interpretation and manuscript drafting

Musa HY: Assisted with design, data collection, analysis, and securing access to the study site.

Mohamad N: Supervised the overall research, including its conception, design, data analysis, interpretation and manuscript drafting.

All authors reviewed and approved the final version of the manuscript.

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