



A twenty year experience with the use of intrauterine contraceptive device (IUCD) in a university teaching hospital in south- south Nigeria

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Abstract

Context: Contraceptive prevalence in Nigeria is low at 17%. Amongst Nigerian women and couples who accept to use contraception, the IUCD is the most commonly used contraceptive method with variation in rates of use between geographical areas and among Health Institutions. Factors that determine decision making on IUCD use are not well understood.

Aims: To study the use, effectiveness, complications and discontinuation rates for intrauterine contraceptive device received at the University of Benin Teaching Hospital from 1997 to 2016 and analyzed in January, 2019.

Study Design: This was a retrospective cross sectional study.

Methodology: The case notes of all 3326 new clients who accepted Copper T intrauterine contraceptive device at the UBTH Family Planning Clinic during the review period were retrieved and analyzed. Data regarding acceptors socio-demographic characteristics, side effects, effectiveness, complications, duration of use and reasons for discontinuation were extracted and entered into SPSS for windows version 22.0 and analyzed.

Results: Out of the 8203 clients that accepted to commence a family planning method, 3326 (40.55%) accepted to use IUCD. The mean age of IUCD acceptors at commencement was 33.4 ± 5.60 and the mean age of their husbands was 39.85 ± 6.91 . The mean parity was 3.73 ± 1.87 (range 0-12), while the mean number of living children was 3.56 ± 1.66 (range 0-10). The mean duration of use (in months) was 40.43 ± 40.13 . Women with 5 or more children (P Value 0.000) and at least a minimum of secondary education (P Value 0.000), were significantly associated with IUCD use duration of > or more than 2 years. Also, women who reported satisfaction with IUCD (P Value 0.000) and no complications (P Value 0.000) were also associated with longer duration of use.

Conclusion: IUCD is a common family planning method used by women at UBTH. Its duration of use is higher among clients with more children, at least a minimum of secondary school education and no complications from its use. This information is relevant for family planning service providers to increase contraceptive uptake by women in Nigeria.

Keywords: Intrauterine device; Contraception; complication; discontinuation; Nigeria.

Introduction

Modern use of IUCD started with the works of Grafenberg and others.¹ Modern IUCD's have been

in use for about six decades, the first being Lippes Loop and Marguiles Spiral. These had significant side effects that resulted in their withdrawal from use, encouraged by research producing more effective types with lesser side effects.² Modern IUCD's are impregnated with copper, levonorgestrel or other metals and hormones that have greatly improved the efficacy and

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acceptability and significantly reduced the side effects.³ The third generation IUD's currently in use are the CuT380A, Multiload 375, Gyneflex, 380S, 380Ag, copper safe 300, Flexigard 330 and Levonorgestrel releasing IUD.⁴ Cu-T380A is the most commonly used IUD in Nigeria and the world over and its typical user and perfect user pearl index is 0.8 and 0.6 per 100 women years respectively. It is also the most commonly used reversible contraceptive.^{5,6}

Family planning is a planned act by sexually active couples to space or limit the number of children they plan to have by the use of contraceptive methods.⁷ Contraceptive prevalence in Nigeria is low at 17%.⁷ Amongst Nigerian women and couples who accept to use contraception, the IUCD is the most commonly used contraceptive method with variation in rates of use from region to region and institution to institution.^{8,9,10} The IUCD acceptor rate in Benin is 42.9%¹⁰ amongst family planning acceptors while the acceptance rate ranges from 11.8% to 66% in Nigeria.^{9,10,11,12,13,14,15,16}

Intrauterine devices (IUD's) have peculiar and occasionally significant side effects that are the major cause of discontinuation from use put at 2.8 to 55.1% in various studies in Nigeria.^{9,10,15,16,17,18,19,20} These side effects include menorrhagia, pelvic inflammatory disease, dysmenorrhea, vaginal discharge and dyspareunia.^{9,10,15,16} IUCD's also have some rare complications such as perforation which usually occurs at insertion and may be noted immediately or months to years later when they are said to have 'translocated' into the uterine wall, peritoneal cavity or other peritoneal and abdominal viscus such as the bladder.^{13,18,19,21,22}

IUCD's belong to the group of long acting reversible contraceptives (LARC) with the CuT380A being amongst the longest continuously active.^{15,17,23,24} The most common reason for IUCD discontinuation is to plan for another pregnancy and this is highest amongst younger and lower parity women.^{9,10,15,16,17}

Many other women discontinue the IUCD after prolonged use at menopause when contraception is no longer needed.^{10,15,17}

Patients who discontinue IUCD as a contraceptive method for side effects or complications would usually switch to another method frequently a hormonal method.¹⁰ Patients who develop immediate complication of perforation (rare) may

require emergency laparotomy to secure hemostasis and repair injured pelvic or abdominal organs.^{9,21} Patients whose perforation or 'translocation' are discovered months to years later if not easily removed manually may need a scheduled laparotomy to remove the IUCD and repair damaged organs.^{9,21,22} The CuT380 A is the most commonly used copper impregnated IUD in Nigeria. It is a third generation IUD. It essentially replaced the second generation copper impregnated IUDs that were in use in the 90's when some clients received CuT250.¹⁰ The third generation IUDs have fewer side effects, are more effective and provide contraception for longer periods. CuT 380A is licensed for single use for a maximum of ten years after when it has to be discontinued or replaced with another CuT380A. CuT380A can be inserted immediately following a delivery (postpartum), at a cesarean section before closure of the uterine incision or more than six weeks post-delivery (interval). Interval IUCD placement is the most used.²⁵

The IUCD was the most commonly used contraceptive method in Benin (42.9%) as at 1996 and this is the situation in many other tertiary centres in Nigeria.^{10,15,16} Since last review of data in Benin from 1990-1996 conducted in 2004, many new contraceptive methods have become available in our Hospital including other long acting reversible contraceptive implants. This research was conducted to determine the current prevalence for IUCD use among our clients. In addition, the acceptability, side effect pattern and discontinuation rates will also be explored. The result of our study will help during counseling to improve contraceptive use among women.

Materials and methods

The study was a retrospective cross sectional study conducted at the Family Planning Clinic of the University of Benin Teaching Hospital. The unit provides specialized family planning services to women, men and families from Edo State and the neighboring states of Kogi, Delta and Ondo. It has dedicated staff nurses (3), resident doctors (6) and consultants (3) as well as medical, nursing and midwifery students on posting. The study period was from 1997 to 2018 covering clients that had their IUCD inserted from January 1st, 1997 to

December 31st, 2016 (twenty years period of insertion). Data was analyzed January 2019 twenty two years after the first study subject received IUCD and two years after the last subject had IUCD inserted.

Clients who present to the clinic are counseled on the different available methods based on current medical eligibility criteria for an informed decision making. Depending on the contraceptive choice of the client, she/he is followed up at four to six weeks, six months and thereafter yearly for IUCD acceptors. Frequency of visits varies for acceptors of other contraceptive methods. For the short acting methods follow-up durations are shorter. Clients are advised by protocol to return to the clinic on scheduled appointment dates or whenever they had questions, notice side effects, complications or wish to discontinue the method for a desire for a new pregnancy or any other reason. Clients in the later years of the study after the advent of GSM in Nigeria who failed to present were contacted on phone and reminded of their clinic appointments. Clients are considered lost to follow-up if client default clinic appointments, never presented even outside scheduled visits or could not be reached via GSM. Ethical clearance for this study was received from the UBTH Hospital Ethical Committee.

The case notes of 3326 new acceptors of IUCD in the twenty years under review (January First 1997 to December 31st 2016 and reviewed up to December 31st 2018) were retrieved from the records section of the clinic. Clients who had IUCD inserted in previous years but who kept coming to the clinic for follow up were excluded. Data from the case notes were retrospectively analyzed for socio-demographic characteristics, efficacy, duration of use, side effects, complications and reasons for discontinuation. The clinic register records of all new contraceptive acceptors and clients during same period were analyzed for acceptors of other family planning methods to note the acceptability of IUCD and the trend of its acceptance over the 20 year study period.

For the purpose of this study, we have defined side effects as worrisome but tolerable symptoms and signs that are treated satisfactorily or patient agrees to continue to cope with. Complications for the purpose of this study we have defined as symptoms, signs, effects and findings noted by patient or provider that are unbearable and unacceptable and

that ultimately culminates in the discontinuation from use of the IUCD. We chose to analyze the data 24 months after the last study participant received the IUCD to give ample time for side effects and complications to be noted.

All data were entered into a personal computer and analyzed using Statistical Package for Social Solutions (SPSS) for Windows, Version 22.0. Armonk, NY: IBM Corporation. Results are expressed in form of absolute numbers, frequency, percentages, mean, mode and standard deviation. Statistical significance was set at 0.01.

Results

In the 20 years from 1997 to 2016, there were 8203 clients who came and accepted to commence a family planning method. Of these, 3326 (40.55%) accepted to use IUCD as their preferred method of family planning following counseling and considering medical eligibility criteria for use of contraceptives. The mean age of IUCD acceptors at commencement was 33.4 ± 5.60 and the mean age of their husbands was 39.85 ± 6.91 . The mean parity of the IUCD acceptors was 3.73 ± 1.87 (range 0-12) while the mean number of living children was 3.56 ± 1.66 (range 0-10). The mean duration of use (in months) amongst IUCD acceptors was 40.43 ± 40.13 .

Table 1 displays the Socio-demographic characteristics of IUCD acceptors. Eight (0.24%) teenagers accessed IUCD. The modal five year age bracket for use of IUCD was 30-34 years (1152/34.64%). Most of the IUCD acceptors were married (3297/99.13%). Single never married constituted 0.48% (16). Secondary/Ordinary Diploma highest level of education constituted 88.27% while University Degree was highest level of education in 10.07% (335). The bulk of clients who accepted IUCD were in Social Class 3 (2241/67.38%).²⁶ Less than 1% of clients were in Social Class 5. Christians constituted 98.68% (3282) of the IUCD acceptors, while 0.93% (31) were Muslims. The Parity of the IUCD acceptors ranged between 0 and 12. The number of IUCD acceptors with ≥ 5 living children was 811 (24.38%), while majority had 1-4 living children 2503 (75.26%).

Table 1. Socio-demographic characteristics of IUCD acceptors 1997-2016

SOCIODEMOGRAPHIC VARIABLES	N=3326	%
AGE GROUP		
< 20 YEARS	8	0.24
20-24 YEARS	143	4.27
25-29 YEARS	660	19.78
30-34 YEARS	1152	34.55
35-39 YEARS	891	26.73
40-44 YEARS	359	10.79
45-49 YEARS	93	2.74
>49 YEARS	20	0.60
Total	3326	100
Marital status		
Single	16	0.48
Married	3297	99.13
Divorced	4	0.12
Separated	3	0.09
Widow	6	0.18
	3326	100
Educational Level		
Primary/No Formal Education	55	1.65
Secondary/OND	2936	88.27
University	335	10.07
	3326	100
Social Class²⁶		
Class 1	252	7.58
Class 2	500	15.03
Class 3	2241	67.38
Class 4	305	9.17
Class 5	28	0.84
	3326	100
Religion		
Christian	3282	98.68
Muslim	31	0.93
African Traditional Religion	8	0.24
Others	5	0.15
	3326	100
No of Living Children		
0	12	0.36
1-4	2503	75.26
5 and Above	811	24.38
	3326	100

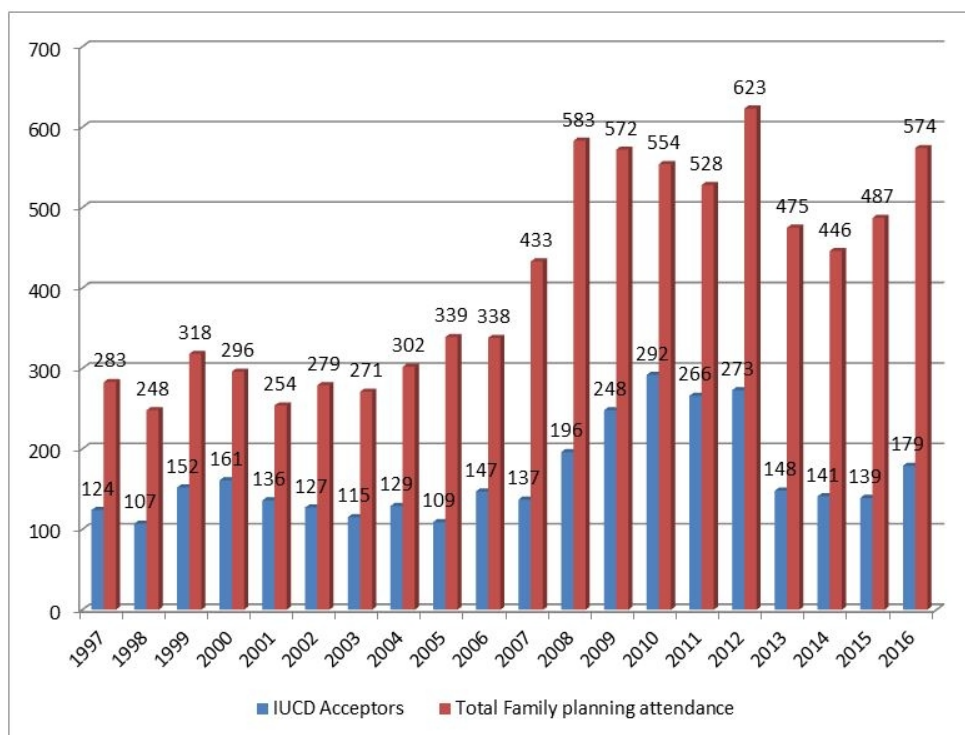


Figure 1: A clustered column showing trend of iucd acceptors and total family planning attendance 1997-2016

Figure 1 is a clustered column showing the trend of IUCD use and yearly total family planning clinic new attendees from 1997 to 2016. The highest family clinic attendance for commencement of a method in 20 years was 2012 (623) while the highest proportion of IUCD acceptance was in 2000 constituting 54.4% of all family planning acceptors/attendees for that year. The lowest proportion of IUCD users was in 2015 constituting 28.54% of all family planning acceptors for that year.

Discussion

In Table 2, the relationship between some socio-demographic and other characteristics of clients with the duration of Use of IUCD is shown. Women with 5 or more living children (χ^2 98.29, P Value 0.000) and at least Secondary education (χ^2 15.12, P Value 0.000), both have positive relationship with duration of use >2 years. Also, ‘feeling satisfied’ (χ^2 20.41, P Value 0.000) and reporting no complications χ^2 45.27, P Value 0.000) are associated with longer duration of use.

In Table 3, the side effect profile amongst IUCD acceptors is shown. 89.51% (2977) reported no side effects. Increased menstrual flow was the most

commonly reported side effect followed by abdominal pain 77(2.32%) and pelvic infection 44 (1.3%).

Table 4 shows that a total of 2390 (71.9%) had discontinued their IUCD by January 2019 when we analyzed the data. Of these women, the desire for pregnancy constituted the bulk of the reason for discontinuation 65.2% (1558). The period of seven months to twelve completed months was the period of highest density of IUCD removal for desire of pregnancy in the 20 year period at 3.46 removals per month (415/6X20). Removal of IUCD for the reason of menopause constituted 11.1% (265) and most of these 72.45% (192/265) were removed after 60 months of use. Expelled IUCD were 3.5% (83) of discontinuers while 4.1% (98) discontinued for the purpose of pelvic inflammatory disease. Contraceptive failure rate was 1.02% (34) while there were 0.3% (6) trans-located IUCD’s. A total of 12.24% (407) suffered complications severe enough to warrant discontinuation of IUCD. These complications included translocation of IUCD into peritoneal cavity 0.18% (6), expelled/extruded IUCD 2.50% (83) menorrhagia 5.5% (184), pelvic inflammatory disease 3.0% (98) and contraceptive

Table 2: Showing the relationship between socio-demographic and other characteristics of clients to duration of use

Sociodemographic Factors	Duration of IUCD use		Chi2	P Value
	= 2 Years	> 2 Years		
No of Living Children			98.29	0.000
1-4	1372 (55.3%)	1110 (44.7%)		
5 and above	281 (35.1%)	519 (64.9%)		
Educational Level			15.12	0.000
Primary / No Formal Education	42 (76.4%)	13 (23.6%)		
Secondary / Tertiary Education	1611 (49.9%)	1616 (50.1%)		
Marital Status			0.02	0.883
Presently in Marriage	1638 (50.4%)	1615 (49.6%)		
Not Presently in Marriage Relationship	15 (51.7%)	14 (48.3%)		
Feeling Satisfied			20.41	0.000
Satisfied	1439 (49.0%)	1497 (51.0%)		
Not Satisfied	214 (61.8%)	132 (38.2%)		
Complications			45.27	0.000
Yes	145 (73.6%)	52 (26.4%)		
No	1508 (48.9%)	1577 (51.1%)		

Figure 2 shows the duration of use (in months) amongst IUCD acceptors. Twenty two percent of clients used the IUCD for ≥ 60 months while 65% of acceptors used it for less than three years.

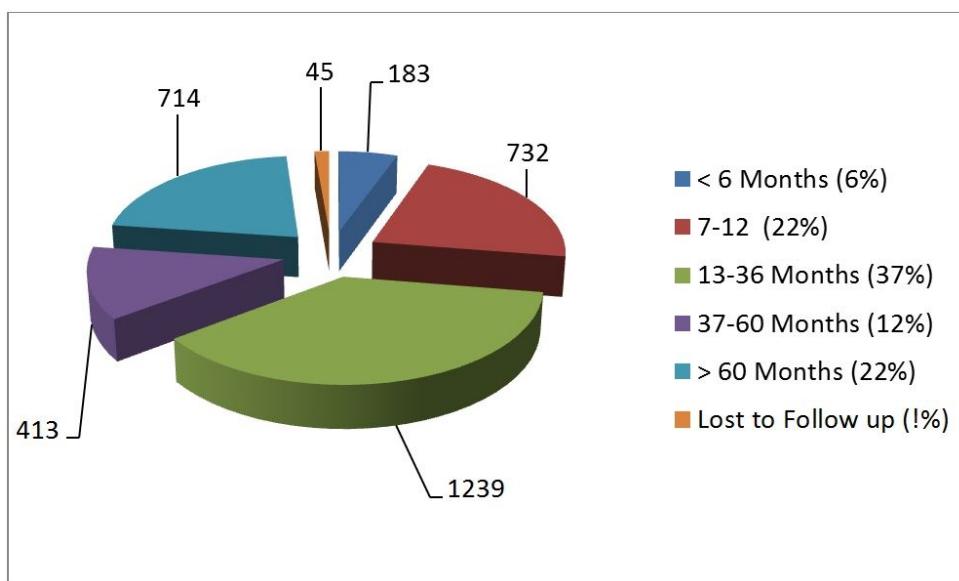


Figure 2: Pie chart showing duration of use in months amongst IUCD acceptors 1997-2016 (analyzed 2019)

Table 3: Side effect profile among study participants

SIDE EFFECTS	FREQUENCY (%)
No Side Effect	2977 (89.51)
Reduced Menses	23 (0.69)
Increased Menses	119 (3.56)
Weight loss	23 (0.69)
Weight gain	43 (1.29)
Pelvic Infection	44 (1.3)
Abdominal Pain	77 (2.32)
Missing string / Displaced IUCD	7 (0.21)
Worsening Hypertension	6 (0.18)
Dyspareunia in Husband/male sexual partner	7 (0.21)
TOTAL	3326 (100.0)

Table 4: Reasons for IUCD discontinuation

	DURATION OF IUCD USE (IN MONTH)					TOTAL
	<6	7-12	13-36	37-60	>60	
	N(%)	N(%)	N(%)	N(%)	N(%)	
Desire for pregnancy	94 (52.8)	415 (67.2)	622 (74.5)	1191 (77.6)	236 (45.9)	1558 (65.2)
Increased menses	31 (17.4)	69 (11.2)	54 (6.5)	6 (2.5)	24 (4.7)	184 (7.7)
Pelvic inflammatory diseases	9 (5.2)	33 (5.3)	37 (4.4)	6 (2.5)	13 (2.5)	98 (4.1)
Pregnancy following contraceptive failure	2 (1.2)	9 (1.5)	15 (1.8)	0 (0.0)	8 (1.6)	34 (1.4)
Husband travelled, no need for contraception	4 (2.3)	10 (1.6)	10 (1.2)	1 (0.4)	2 (0.4)	27 (1.1)
Worrisome vaginal discharge	10 (5.8)	4 (0.7)	12 (1.5)	2 (0.8)	5 (1.0)	33 (1.4)
Widowed	1 (0.6)	4 (0.7)	5 (0.6)	3 (1.2)	8 (1.6)	21 (0.9)
Polymenorrhoea	0 (0.0)	1 (0.2)	1 (0.1)	0 (0.0)	0 (0.0)	2 (0.1)
Translocated IUCD	2 (1.2)	1 (0.2)	2 (0.2)	0 (0.0)	1 (0.2)	6 (0.3)
Expelled IUCD	16 (8.9)	35 (5.7)	21 (2.5)	7 (2.9)	4 (0.8)	83 (3.5)
Menopause	4 (2.3)	17 (2.8)	32 (3.9)	20 (8.2)	192 (37.8)	265 (11.1)
Bilateral Tubal ligation	0 (0.0)	0 (0.0)	2 (0.2)	0 (0.0)	6 (1.2)	8 (0.3)
Separated	1 (0.6)	1 (0.2)	0 (0.0)	0 (0.0)	2 (0.4)	4 (0.2)
Lost to follow up	4 (2.3)	19 (2.1)	21 (2.6)	10 (4.1)	13 (2.6)	67 (2.8)
TOTAL	178 (100.0)	618 (100.0)	834 (100.0)	246 (100.0)	514 (100.0)	2390 (100.0)

failure-pregnancy 1.02% (34). Sixty seven (0.2%) IUCD acceptors were lost to follow up at various periods from insertion of IUCD.

The continuation rate for use of IUCD at the end of 6 months, one year, two years and 5 years were 94.66, 75.07%, 50.99% and 28.14% respectively. The first year expulsion rate was 1.53% and total expulsion rate was 2.45%. First year contraceptive failure rate was 0.33% and cumulative over study period was 1.02%.

The average yearly new family planning acceptance at the UBTH family planning clinic in the 20 years under review is 410.15 which is lower than the average recorded in the early 90's of 882.57. This may be due to the emergence of numerous private clinics around Benin that now also offer wide range of family planning services. Another reason may be due to the frequent industrial actions (strikes) by various unions in the public hospitals including UBTH that has reduced patronage and confidence of clients.

The IUCD remains the most used contraceptive method at our centre at 40.55%. It falls within the range of 11.8% to 66% for centres in Nigeria^{9,10,11,12,13,14,15,16} and is comparable to the rate of 42.9% in a previous study in our centre.¹⁰ This is despite the advent of new contraceptive methods like implanon/nexplanon, jadelle and norygynon. The effectiveness of the IUCD, ease of use and monitoring and the fact that it has a side effect profile that is acceptable to most users endears it to clients. The mean age of IUCD users was 33.4±5.6 and the 30-34 age bracket remain the highest users of IUCD 34.55% compared to previous data of 33.5%.¹⁰ The mean age of the husbands of the acceptors of IUCD was 39.85±6.91. Men in Nigeria usually spend some time getting financially stable before taking on the responsibilities of marriage and family thus they are some years older than their wives.

The mean parity of the women was 3.73±1.87 (range 0-12). The mean number of living children was 3.56±1.66 (range 0-10). The slight disparity between parity and number of living children is due to the high perinatal, infant and under five mortality rates in Nigeria. The majority, 75.26% (2503) had 1-4 living children. Most of these wanted IUCD for spacing children. Women with 5 living children and

above were 24,385 (811). Most of these wanted IUCD for limiting birth. The average duration of use of IUCD amongst IUCD users was 40.43. The spacers were 63.9% (2124) and limiters (36.1%). Most of the clients were in the sexually active age groups who wanted to actively space their child birth to create room for education and carrier development, while a significant proportion used the IUCD effectively for limiting child birth, while enjoying a healthy sexual life with their husbands and partners and awaiting menopause.¹⁷

There was no significant change in the trend of IUCD usage over 20 years. This is due to the clear understanding of the efficacy, side effects and complications which are explained to clients by trained staff hence clients are ever willing to continue the use pattern of IUCD. Only 8 teenagers accepted IUCD in the period under review. Teenagers by their nature are adventurous in unstable relationships that are prone to sexually transmitted infection and pelvic inflammatory disease. When told of the possibility of PID especially in the face of frequent changes of sexual partners, the teenagers decide not to use IUCD to avoid possible complications.

An overwhelming majority of IUCD acceptors were married 99.13% (3297). The single (never married) constituted 0.48% (16). Women in stable marriage relationships access family planning services more and marriage and monogamous faithfulness reassures women they can avoid the side effect of PID that IUCD can cause. The bulk of the IUCD acceptors were in social class 3.²⁶ Social Class 5 clients (<1%) may see the Teaching Hospital as expensive and a place of 'last resort' and so use the primary health care centers and maternities around them.

The relationship between some social demographic and other client characteristics with the duration of IUCD use is clearly captured. Having 5 and above number of living children and at least secondary education both have positive relationship with duration of use >2 years. This will mainly be accounted for by women who decided to use the IUCD as a limiting tool against further child birth. Feeling Satisfied with IUCD as a contraceptive and reporting no complications are both associated with longer duration of use. Being satisfied will invariably mean effective and minimal or no side

effect. This is bound to influence positively duration of use.

Most (89.51%) IUCD acceptors reported no side effects. This suggests that the IUCD continues to be an effective contraceptive with minimal or acceptable side effects. Increased menstrual flow was the most commonly reported side effect followed by abdominal pain 77(2.32%) and pelvic infection 44 (1.3%) as noted in previous Nigerian studies.^{9,10,15,16} IUCD expulsion, contraceptive failure rates and translocation rates remained low in this study. This is assured by training and retraining of clinic staff and counseling and informed choice on the part of the client which make these most feared complications of IUCD use to be at acceptably low rates.

The Copper 380A IUCD continues to be the most used family planning method in UBTH and is the second most used family planning method the world over despite development and availability of other family planning methods and devices. Its duration of use is higher among clients with more children, at least Secondary School education and no complications from its use. This information is relevant for family planning service providers to increase contraceptive uptake by women in Nigeria.

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