■ Original Article

A Comparative Study between Lydia and Conventional Copper T Intrauterine Contraceptive Device at Aminu Kano Teaching Hospital, Kano

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ABSTRACT

Background: Copper intrauterine contraceptive device is one of the commonest method of contraception worldwide. ***Aim/Objectives:*** To compare the acceptance and complications between the conventional Copper T IUCD to the Lydia IUCD among IUCD users in the family planning unit of Aminu Kano Teaching Hospital. **Study design and setting:** A comparative study between the conventional Copper T and the Lydia IUCD in Aminu Kano Teaching Hospital. **Methods:** A well-structured interviewer based questionnaire was used to collect data from clients over a period of 1 year; from 1st September, 2018 to 31st August, 2019. The data was analysed using SPSS 20. Chi square was used to compare variables where appropriate. **Results:** The study revealed that 51% of the clients were using the conventional copper T while 49% of the clients were using Lydia. The most common complication within the 1st week was lower abdominal pain (C=21.6%, L=23.5%) and spotting (C=13.7%, L=10.8%) while lower abdominal pain and heavier bleeding was found to be more frequent in the 1st month (26.5%, 26.5 respectively), 1st 6 month (20.9%, 26.7% respectively) and first year (30.3%, 28.8% respectively). Most complications were found to be higher in the conventional Copper T group than the Lydia group. The removal rate was low (12.8%). The most frequent reason for removal was complications (9.8%). **Conclusion:** The conventional copper T had more clients but more complications associated with its use. The removal rate was high and commonest reason for removal was complication.

Keywords: Copper T, Lydia, IUCD

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Introduction

The intrauterine device (IUD) is the most common reversible method of contraception.[1] The IUDs are in the group of long acting reversible contraceptives and has undergone several modifications from the inert devices to devices that contain either

copper or hormone attached to their frame.[2]

Copper IUD is used in over 130 million women world-wide.[3] Thirteen point six percent of couples around the world are on IUD for birth control.[4] Utilization rates vary, with high rates (14.5%) in less developed countries and low rates in more developed countries.[4,5]

Current data reveals that the contraceptive prevalence rate of Nigeria is about 10% and far less than the African average of 30%.[6] The prevalence is higher in the southern compared to the northern parts of the country.[6,7] A study done in Kano reported IUD to be the 2nd commonest contraceptive method with a rate of 32.3%.[8]

The two main types of IUD are the copper device and the hormonal device.[5] Copper T380A is by far the most popular IUD in the world.[7,9] It has been shown by controlled randomised trials to be the most effective[10] with failure rate of less than 1%.[7]

The exact mechanism of action is unknown. Current theories include spermicidal activity, interference with either normal development of ova or its fertilization, and activity of the endometrium that may promote phagocytosis of sperm, impede sperm migration or capacitance.[7] There is evidence to suggest that the copper IUD also works by impairing implantation.[4] Copper T-380A IUD is the most effective form of emergency contraception with a failure rate of 0%0.13%.[11]

Some advantages of copper IUD include relative affordability, does not interrupt the process of sexual intercourse and hormonal side effects are eliminated since it does not contain hormones.[12,15] It is also one of the safest, most effective and least expensive contraceptive available.[13,16] It has no systemic side effects and can be safely used by breastfeeding women and rarely produces complications.[13] The copper IUDs are licensed to last about 10 years,[7] or beyond. Its efficacy in contraception is similar or even better than female sterilization.[5] An additional benefit of IUDs is their reversible nature.[14]

Despite the advantages of using copper T IUD, its wide spread use have been limited by reported side effects such as heavy menstrual flow and pain on insertion.[12,15] Other side effects include abnormal uterine bleeding, dysmenorrhea, excretion of the IUD, pelvic infection, pain and persistent cramping, expulsion, perforation and rarely embedment.[3,5,7,16] Some of these complications are due to considerable variation in uterine cavities and changes in size and volume of the uterus during the menstrual cycle.[17] The result of this is the dynamic shift in the design of IUDs from bulky Lippes loop to less bulky copper T380A and the frameless IUD.[18] Nelson et al noted that the shift in the design of IUDs has led to impressive growth in the use of IUDs in the U. S especially after the DalkonR Shield lawsuits of 1986.[7] Despite the modification in the design of IUDs complications are still of concern and newer technologies are been developed to reduce these complications.[4] The need for proper client counselling is important and health care practitioners must be cautious on information to give out to IUD clients.[20]

Abnormal uterine bleeding has been known to account for a major reason for removal, other reasons include abdominal pain, husband request, infection, and desire for pregnancy.[12,16] Medical reasons for removal are persistent cramping, bleeding or anaemia, accounting for about 20% of removals during the first 3 months, acute salpingitis, or Actinomyces on Pap smear, pregnancy, and significant post-insertion pain, which may indicate improper placement or partial perforation.[7]

LydiaR is a brand of copper T 380A IUD that can prevent pregnancy for as long as 10 years.[20] There are several types such as safe load, sleek and copperY to cater for different group of women[20] which was introduced to our facility in 2017. It is supplied in a single use copper wire wound around its vertical arm only.

There have been several studies on different types Copper T IUDs worldwide, but there are no studies done in our centre and no studies were done to compare the LydiaR brand and the conventional copper T380A.

Aim and Objectives

The aim of this study is to compare the complications and acceptance between LydiaR Copper T and the conventional copper T in women using same in Aminu Kano Teaching Hospital.

- **Specific Objectives**
  1. To determine the most acceptable IUD between LydiaR and the conventional copper T.
  2. To determine the complications of both
  3. To determine the indications / reasons for removal / discontinuation

Methodology

The study was carried out in the family planning unit of Aminu Kano Teaching Hospital. It is a comparative study between the conventional copper T380A IUD and LydiaR. It was carried out from September 1st 2018 to August 31st 2019.

All clients using the copper T IUD that consent for the study were included. A well-structured interviewer based questionnaire was used to collect data from the clients in the family unit at a specified time.

The data collected was analysed using statistical package for the social sciences (SPSS) software package version 20. The data analysed included demographic data, type of copper T IUD the clients use, the complications over a period of time and the reasons for removal. Chi square test was used to compare variables where applicable and p value of <0.05 was set as test of statistical significance.

Results

During the study period of 1st September 2018 to 31st August 2019, 102 clients using IUDs in the family planning unit of Aminu Kano Teaching hospital were interviewed, out of which 50(49%) were currently using the LydiaR and 52(51%) were using the conventional Cu T. The response rate was 100% as the clients who consented were administered a well-structured interviewer based questionnaires.

The mean age ($\pm$SD) of all the clients was 33.8$\pm$6.86 years and the age range was 20-50 years. Majority of clients (52%) were within the age of 30-39 years. The mean age ($\pm$SD) of the LydiaR group is 32.6$\pm$7.01 years while the mean age ($\pm$SD) for the conventional Cu T is 34.9$\pm$6.57 years. There was no statistically significant difference between the mean age of the two groups. [T = -1.772, df= 100, p = 0.080; 95% CI=-5.050-0.268].

The median parity was 4. There was no statistically significant difference between the parity of the two groups. [T = -1.629, df = 100, p = 0.106, 95% CI= -1.907-0.187].

Up to 48% of the clients were multipara and 40.8% were grand multipara. Majority of the clients had their last child-birth 5 years or less with more than half of them using LydiaR (51%).

All the clients were married and most of them were Hausa (92.2%), Muslims (94.1%) and had formal education (94.1%). Table 1.

Most of the clients (74.5%) were given options to choose between the two IUDs while few of them were not (Figure 1). There was no statistically significant association between the educational level and the choice of the IUD as shown in table 2 (p=0.139).

LydiaR was more expensive than the conventional Cu T. (LydiaR: N1000.00 conventional Cu T: N600.00); and less available than the conventional Cu T.

Table 1: Cross tabulation of Socio demographic Characteristics between the LydiaR group and the Conventional copper T

| SOCIO DEMOGRAPHIC DATA	LYDIA^R GROUP (%)	CONVENTIONAL CU T (%)	TOTAL (%)	X^2, (P)
AGE-GROUP (in years)				
20-29	20(19.6)	10(9.8)	30(29.4)	
30-39	19(18.6)	34(33.3)	53(52)	
40-49	10(9.8)	6(5.9)	16(15.7)	
50-59	1 (1)	2(2)	3(2.9)	
Total	50(49)	52(51)	102(100.0)	0.022
PARITY				
Primipara	10(9.8)	2(2)	12(11.8)	
Multipara	23(22.5)	26(25.5)	49(48)	
Grandmultipara	17(16.7)	24(23.5)	41(40.2)	
Total	50(49)	52(51)	102(100)	0.036
LCB*				
=5	49(48)	47(46.1)	96(94.1)	
>5	1 (1)	5 (4.9)	6(5.9)	
Total	50(49)	52(51)	102(100)	(0.036)
TRIBE				
Hausa	46(45.1)	48(47.1)	94(92.2)	
Yoruba	2(2)	3(2.9)	5(4.9)	
Igbo	0(0)	1(1)	1(1)	
Others	2(2)	0	2(2)	(0.554)
Total	50(49)	52(51)	102(100)	
RELIGION				
Islam	47(46.1)	49(48)	96(94.1)	
Christianity	3(2.9)	3(2.9)	6(5.9)	
Total	50(49)	52(51)	102(100)	(0.642)
EDUCATIONAL STATUS				
Formal education	49(48)	47(46.1)	96(94.1)	
Informal education	1(1)	5(4.9)	6(5.9)	
Total	50(49)	52(51)	102(100)	(0.205)

LCB - Last Child Birth
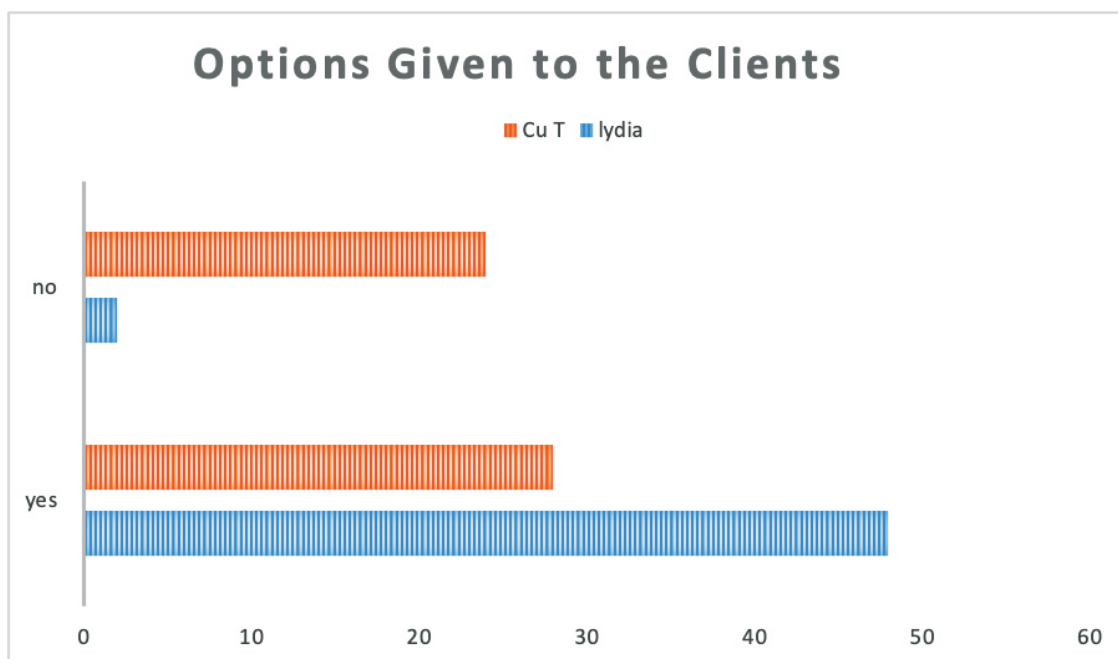
Figure 1: Shows that clients who were given option preferred LydiaR IUD to the conventional Copper T380A.

Table 2: Cross tabulation between Educational Status and Choice of Contraceptives (Lydia or Cu T)

EDUCATIONAL STATUS	LYDIA[R] GROUP (%)	CONVENTIONAL CU T (%)	X^2, (P)
Formal education	47(61.8%)	25(32.9%)	
Informal education	1(1.3%)	3(3.9%)	(0.139)

Child spacing (68.6%) was the main reason for IUD insertion followed by medical conditions (19.6%). Table 3.

Table 3: Cross Tabulation of indications for insertion in the LydiaR Group or the Conventional Copper T.

INDICATION	LYDIA[R] GROUP (%)	CONVENTIONAL CU T (%)	TOTAL (%)	X^2, (P)
Child spacing	31(30.4)	39(38.2)	70 (68.6)	
Medical disorder	7(6.9)	5(4.9)	12(11.8)	
Completion of family size	12(11.8)	8(7.8)	20 (19.6)	
Total	50(49)	52(51)	102 (100)	0.366
PERIOD OF INSERTION AFTER LCB?				
<1yr	36 (35.3)	17 (16.7)	53 (52)	
1-5yrs	14 (13.7)	29(28.4)	43(42.2)	
>5yrs	0	6(5.9)	6(5.9)	
Total	50 (49)	52 (51)	102(100)	0.000
REASONS FOR REMOVAL				
Complications	5(4.9)	5(4.9)	10(9.8)	
Desire for conception	0	1(1)	1(1)	
Husbands request	1(1)	0	1(1)	
Expired	0	1(1)	1(1)	
Not removed	44(43.1)	45(44.1)	89(87.3)	
Total	50(49)	52(51)	102(100)	(1.000)

More than half of the clients (52%) had the IUD inserted less than a year after their last child birth with most of them using the LydiaR IUD (35.3%). While a small percentage (5.9%) of them had it more than 5 years after their last child birth and all of them were using the conventional copper T (Table 3). There was a statistically significant association between the period of insertion and the type of IUD ($\chi^2 = 0.000$).

Majority of them (87.3%) had not discontinued the use of IUD. Among those that discontinued the use of the IUD, the most frequent reason for removal was found to be for complications (9.8%) like heavier, longer and inter-menstrual bleeding and back pain. There was no statistically significant association between the reason for removal and the type of IUD (p = 1.000) between the two groups.

The commonest complications within the 1st week of insertion in both groups were lower abdominal pain (L: 23.5% and C: 21.6%), spotting (L: 10.8% and C: 13.7%) and back pain (L: 7.8% and C: 9.8%). Heavier bleeding, longer periods and husband's complaining of threads were seen more in clients with the conventional Cu T than those with the Lydia. More clients in the LydiaR group (15.7%) had no complications within the 1st week compared to the conventional Cu T group (10.8%) (Table 4). Conventional Cu T had higher rates of all complications than the Lydia group in the four weeks of insertion as shown in Table 3. Amenorrhea was seen more in the Lydia[R] group (5.9%) than the Cu T group (2.9%) but was not statistically significant (Table 4). The commonest complications seen from 27 to 52 weeks were heavier periods, longer periods and lower abdominal pains (Table 5).

Table 4: Complications between the LydiaR Group and the Conventional Cu T; within the first month of insertion

COMPLICATIONS Within 1st Week	LYDIA^R GROUP (%)	CONVENTIONAL CU T (%)	TOTAL (%)	X^2, (P)
Spotting	11(10.8)	14(13.7)	25(24.5)	0.563
Longer periods	1 (1)	8(7.8)	9(8.8)	(0.031)
Heavier periods	2 (2)	10(9.8)	12 (11.8)	(0.028)
Inter-menstrual bleeding	5(4.9)	6(5.9)	11 (10.8)	0.802
Lower abdominal pain	24(23.5)	22(21.6)	46(45.1)	0.564
Back pain	8(7.8)	10(9.8)	18(17.6)	0.669
Abnormal vaginal discharge	5(4.9)	5(4.9)	10(9.8)	(1.000)
Thread irritation	6(5.9)	7(6.9)	12.7(13)	0.825
Husband's complaint	6(5.9)	10(9.8)	16(15.7)	0.315
Expulsion	0	1 (1)	1(1)	(1.000)
No complication	16(15.7)	11(10.8)	27(26.5)	0.215
COMPLICATIONS				
2nd to 4th week				
Spotting	4(3.9)	9(8.8)	13(12.7)	0.153
Longer periods	8(7.9)	13(12.9)	21(20.8)	0.240
Heavier periods	8(7.8)	19(18.6)	27(26.5)	0.019
Inter-menstrual bleeding	3.9(4)	9(8.8)	13(12.7)	0.159
Lower abdominal pain	11(10.8)	16(15.7)	27(26.5)	0.316
Back pain	7(6.9)	10(9.8)	17(16.7)	0.479
Abnormal vaginal discharge	2(2)	4(3.9)	6(5.9)	(0.678)
Thread irritation	4(3.9)	4(3.9)	8(7.8)	(1.000)
Husband's complain	1(1)	9(7.8)	9(8.8)	(0.031)
Amenorrhea	6(5.9)	3(2.9)	9(8.8)	(0.314)
No complication	21(20.6)	10(9.8)	31(30.4)	0.012

TABLE 5: Complications between the LydiaR Group and the Conventional Cu T; from 5th to 52 weeks of Insertion

COMPLICATIONS 5 to 26 weeks	LYDIA[R] GROUP (%)	CONVENTIONAL CU T (%)	TOTAL (%)	X^2, (P)
Spotting	3(3.5)	4(4.7)	7(8.1)	(1.000)
Longer periods	7(8.1)	11(12.8)	18(20.9)	0.401
Heavier periods	10(11.6)	13(15.1)	23(26.7)	0.638
Intermenstrual bleeding	2(2.3)	2(2.3)	4(4.7)	(1.000)
Low abdominal pain	6(7)	12(14)	18(20.9)	0.171
Back pain	7(8.1)	9(10.5)	16(18.6)	0.728
Abnormal vaginal discharge	1(1.2)	5(5.9)	6(7.1)	(0.207)
Thread irritation	1(1.2)	1(1.2)	2(2.3)	(1.000)
Husband's complain	0	4(4.7)	4(4.7)	(0.118)
Amenorrhea	4(4.7)	4(4.7)	8(9.3)	(1.000)
Expulsion	0	1(1.2)	1(1.2)	(1.000)
No complication	16(18.6)	10(11.6)	26(30.2)	(0.105)
COMPLICATIONS				
27 to 52 weeks				
Spotting	1(1.5)	2(3)	3(4.5)	(1.000)
Longer periods	6(9.1)	8(12.1)	14(21.2)	0.927
Heavier periods	10(15.2)	9(13.6)	19(28.8)	0.366
Intermenstrual bleeding	2(3)	1(1.5)	3(4.5)	(0.578)
Low abdominal pain	7(10.6)	13(19.7)	20(30.3)	0.335
Back pain	4(6.1)	11(16.7)	15(22.7)	0.125
Abnormal vaginal discharge	3(4.5)	4(6.1)	7(10.6)	(1.000)
Thread irritation	1(1.5)	0	1(1.5)	(0.439)
Husband's complaint	0	2(3)	2(3)	(0.500)
Amenorrhea	1(1.5)	3(4.5)	4(6.1)	(0.625)
Expulsion	1(1.5)	0	1(1.5)	(0.439)
No complication	13.6(9)	10(5.2)	19(28.8)	0.721

Discussion

More than half of the clients (52%) were between the age of 30-39 years which is similar to findings by Igwe et al from a study done in Abakalilki, Southwestern Nigeria, who reported 51.3% of their IUD users being between the age of 30-39 years.[2] The mean age was found to be 33.8± 6.86 years which is similar to findings by Mutihir et al in Jos15 but higher than 25± 5.2 years obtained by

Sanders et al from a study done in USA.[1] There were no teenagers in this study which is similar to the findings of Igwe et al.[2] This may be due to teenagers' and younger women's preference for contraceptives that are reversible.

Majority of the patients were multipara and grand multipara (48% and 40.2% respectively) which is similar to the findings of Dimwoke et al in Nnewi, Southeastern Nigeria and Mutihir et al in

Jos North central Nigeria who reported 50.91% vs 31.52%, 46.1% vs 38% respectively.[10,15] This may be due to women of higher parity preferring longer acting contraceptives in order to space out, limit or stop conception.

All of the patients were married and multipara. This is similar to finding in Jos.[15] Igwe in Abakiliki however reported that 1.3% of the clients were nulliparous. Our study did not document any nulliparous respondent. Majority of them were Hausa (92.2%) and Muslims (94.1%). This is probably because the study was done in a predominantly Muslim community.

There was no statistically significant association between educational level and choice of IUD (p=0.139) in the study. Iklaki et al[7] however reported that use of IUD was highest among women with secondary school education.

More than half of the clients (52%) had the IUD inserted within 1 year after their last childbirth. This is quite similar to 65.76% reported by Dimwoke from Nnewi, Southeastern Nigeria.[10] Proper counselling of postnatal patients on contraceptives might have played a role in this contraceptive uptake.

Child spacing was reported to be the most frequent indication (68.6%) for IUD insertion which is a little higher than 58.7% reported in a similar study.[10] A study in Northern Ghana however, showed that post-abortal insertion as a major indication for the use of IUD.[15]

The main reason for IUD removal in this study was complications (10.8%) such as lower abdominal pain, Dysmenorrhoea and heavy bleeding. This was different from other studies where desire of another pregnancy is the main reason for discontinuation of the IUD.[2,7,16] This is probably due to majority of the users have the device for less than one year(52%) and the major reason for insertion was for child spacing (68%). (table 3).

The commonest complications from this study included lower abdominal pain, dysmenorrhea and heavy bleeding. This is similar to the finding in Calabar but different from the findings of Olamijulo et al in Lagos who reported abnormal vaginal discharge (40.8%), and back pain reported in Jos[16] as the commonest undesirable effect of IUD respectively.[13] Clients using IUDs in the study centre are usually counselled properly on how to prevent infection and are given prompt treatment.

Within the first week, two complications; longer period (p=0.031) and heavier menses (p=0.028), were found to have statistically significant difference between the conventional CuT and the LydiaR groups. The heavy bleeding persisted to 4 weeks (p=0.019) post insertion in favour of the LydiaR group. After 4 weeks there was no statistically significant difference in the pattern of complications in the two groups up to 52 weeks. This is possibly inferring that the reduced complications seen in the LydiaR group may not be for a prolong duration. There is need therefor for cautious counselling of clients on expected complications of the two devices.[19]

In conclusion, the study revealed that clients who were given option preferred LydiaR over the conventional Copper T. Conventional copper T was more in use though this was not statistically significant. The main indications for insertion were for child spacing, completion of family size and medical conditions. The main reason for removal was complications in both groups. There was no statistically significant difference in the complication pattern of both groups except for longer and heavy periods which were statistically significant within the first four weeks of insertion.

There is need to conduct a randomized controlled trial to ascertain the true difference between the two IUD devices in order to advice on the claim of superiority of one over the other.

Conflict of Interest: None

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