

Research Article

Awareness, perception and acceptability of bilateral tubal ligation among women attending antenatal care at Federal Teaching Hospital, Birnin-Kebbi

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Abstract

Background: Contraception is any temporary or permanent measures aimed to prevent conception. Bilateral tubal ligation (BTL) is a surgical and permanent method of contraception offered to women who have completed their family size or aim to limit their family size due to any reason that may negatively affect their lives when the pregnancy is continued. The practices of bilateral tubal ligation in Sub-Saharan African countries is very limited, because of the high desire for a large family size, cultural and religious factors, misconception and fear of the procedure. **Aim:** To assess the knowledge, perception and acceptability of BTL among women attending Antenatal clinic at Federal Teaching Hospital, Birnin Kebbi. **Method:** This was a cross-sectional study conducted between 1st of February to 31st of May, 2025. The needed information was obtained using structured questionnaire. Data was analyzed using statistical package for social sciences version 22. **Results:** This study showed that 75.6% of the participants were aware of bilateral tubal ligation. About 52.9% of them have good perception towards it, and 63.8% of them are ready to accept BTL. Most of those who rejected BTL their reasons were basically the fear of the surgery (43.2%). There is statistically significant relationship between the fear of the procedure and rejection of BTL. **Conclusion:** The participants have good knowledge, perception and acceptability toward BTL. The main reason for the rejection of the BTL was the fear of the surgery

Keywords: Bilateral Tubal ligation, Knowledge, perception, acceptance, Nigerian women.

1. Introduction

Bilateral tubal ligation (BTL), is a permanent method of female sterilization, that results in mechanical blocking or interruption of the fallopian tubes, it prevents sperm from fertilizing the egg (WHO, 2025, Ronald *et al*, 2013, Sambo *et al*, 2021 & Scott *et al*, 2003). The procedure for BTL was first performed in the early 17th century by James Blundell. And the first published report of this procedure was in the year 1881 (Joshi *et al*, 2015 & Micks *et al*, 2015). By mid-20th century, it has begun to gain acceptance and popularity (Micks *et al*, 2015). BTL is an effective method of female contraception for women who have completed their desired family size or in whom a medical condition contraindicates pregnancy (Ronald *et al*, 2013, Sambo *et al*, 2021 & Micks *et al*, 2015). There are various surgical techniques for BTL which include Pomeroy, Modified Pomeroy, Parkland, Uchida, Madlener, Kroener and Irving (Ronald *et al*, 2013 & Kulier *et al*, 2003). The commonly practiced BTL technique

is the modified Pomeroy's technique. This is simply because Pomeroy's technique is easier to perform, also it is one of the techniques with the lowest failure rate (Wekere *et al*, 2023). In addition to that, the fallopian tubes can be approached through various means which include laparotomy, mini-laparotomy, culdotomy, culdoscopy and laparoscopy using different anaesthetic techniques (Swende *et al*, 2010 & Akpor *et al*, 2016).

The BTL, is a simple surgical procedure associated with minor complications, and this procedure can be carried out either as an outpatient or inpatient procedure. And it can be done at any time, regardless of the woman's menstrual cycle in the non-pregnant women or during the post-partum (usually within 72 hours after delivery), interval (done six weeks or more after delivery) or following spontaneous or induced abortion (Sambo *et al*, 2021, Swende *et al*, 2010 & Akpor *et al*, 2016). BTL can also be performed during

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caesarean section or as a sub-umbilical mini-laparotomy before uterine involution following vaginal delivery (Swende *et al*, 2010 & Adebimpe *et al*, 2016). Hysteroscopic tubal occlusion is generally performed during the early follicular phase of the menstrual cycle (Ronald *et al*, 2013). However, many reports have shown that most bilateral tubal ligations in Nigeria are usually carried out during caesarean section, only few are done postpartum and interval (Wakere *et al*, 2023 & Adebimpe *et al*, 2016). The most common indication for tubal ligation in Nigeria is repeat caesarean sections with completion of family size (Wakere *et al*, 2023 & Makhathini *et al*, 2019). Failure after surgical ligation is rare and crude failure rate ranges from 0.2%-1.3% with highest failure rate in tubal ligation done at caesarean section or immediate postpartum (WHO, 2013 & Kulier *et al*, 2003).

Some good number of studies revealed a good knowledge of modern contraceptives, including BTL as demonstrated across some studies (WHO, 2003 & Mukhthini *et al*, 2019). However, a significant number of women have reservations and are unwilling to accept bilateral tubal ligation as a form of contraception even when completed their family (WHO, 2003 & Mukhthini *et al*, 2019). Different studies have shown the different responses as to the uptake of modern contraceptives in Nigeria especially that of Bilateral Tubal Ligation (BTL) (Swende *et al*, 2010, Yakubu *et al*, 2020, Mutahir *et al*, 2008. And Adebimpe *et al*, 2016). This study therefore, aimed to assess the willingness to the uptake and the factors determining its acceptability among pregnant women attending the antenatal care clinic in Federal Teaching Hospital, Birnin Kebbi. These findings would guide women counseling to improve their readiness to the uptake of bilateral tubal ligation (BTL) after completion of their family size.

The findings of this study can also be used by the family planning unit of the hospital, the department of Obstetrics and Gynaecology, the management of FTH, Birnin Kebbi and the government at large to formulate policies that will improve the uptake of modern contraceptives, especially while counselling them on BTL during or outside Caesarean section in Federal Teaching Hospital, Birnin Kebbi and in Nigeria at large.

The research questions: 1. What is the acceptance rate of BTL among pregnant women attending antenatal care clinic at Federal Teaching Hospital, Birnin Kebbi? 2. What are determinants of BTL acceptance among pregnant women attending ANC at FTH, Birnin Kebbi and 3. What are the barriers to the BTL acceptance among pregnant women attending ANC clinic in FTH, Birnin Kebbi.

The research Hypothesis are:

H₀₁. There is no association between age, parity and number of leaving children and acceptance BTL among women attending ANC at FTH, Birnin Kebbi.

H₀₂. There is no association between fear of surgery, religious belief and cultural belief and perception to BTL

Alternative Hypothesis (H_a):

H_{a1}. There is an association between age, parity and number of leaving children and acceptance BTL among women attending ANC at FTH, Birnin Kebbi.

H_{a2}. There is an association between fear of surgery, religious belief and cultural belief and perception to BTL

2. Methodology

This was a cross-sectional, descriptive study involving consenting women attending antenatal care clinic at FTH, Birnin Kebbi. Study area: This study was carried out at the antenatal clinic at the Federal Teaching Hospital, Birnin Kebbi. The Federal Teaching Hospital, Birnin Kebbi is a tertiary health facility that serves as a referral Centre for private, primary and secondary health care facilities, as well as the state tertiary health care facility. The hospital has capacity about 600 beds and the maternity complex has 100 beds. Currently, the antenatal care clinics are conducted on Mondays and Thursday every week. About 100 to 150 pregnant women are seen during each antenatal care clinic. The routine activities during all clinic sessions include group health education, performance of vital signs by the nurses, laboratory investigations and Routine Immunization for Tetanus Toxoid for pregnant women and BCG, OPV, PENTA, Measle for children.

The study assessed the participants' level of knowledge of BTL, the perception about the BTL and readiness to accept it as a form of permanent contraception, among the women attending antenatal clinic in Federal Teaching Hospital, Birnin Kebbi. The study population includes all pregnant women accessing antenatal care at the antenatal care clinic of the Federal Teaching Hospital, Birnin Kebbi, who consented to participate in the study.

Convenience sampling method was employed and the sample size was estimated using Cochran Formula. This gave a minimum sample of size of 312 participants. Assuming a non-response rate of 10%, a sample size of 343 women was gotten which was rounded up to 350.

Ethical consideration: Ethical approval was obtained from the Institutional Health Research and Ethic Committee. Data analysis: Both Self and Interviewer administered questionnaires were used to obtain data from the study participants. The questionnaires were pretested and validated. They were administered, and data obtained was imputed on the data page of the statistical package for social sciences version 25, and the data was cleaned as appropriate. Analysis of data was by computer using the Statistical Package for Social Sciences (SPSS; SPSS- 25 for Windows Evaluation Version). Level of statistical significance was set at p-value

<0.05 with 95% confidence level.

3. Result

A total of 350 questionnaires were administered, out of which 323 questionnaires were properly filled-in and returned by the respondents for analysis, giving a response rate of 92.30%. The mean age of the participants in this study was 27.41 ± 4.73 . Majority (55.4%) of them were within the age range of 25-34 years. Women with tertiary level of

education constitutes 45.20% while 38.70% had only secondary level of education and only 9.0% had no formal education. Two hundred and forty (74.3%) are Hausa/Fulani, Yorubas constitute 9.6%, 5.9% were Igbos while 10.2% belongs to the other ethnic minorities. Almost all (98.8%) the respondents were married. And 92.3% practices Islam 7.7% are Christian. More than half (63.2%) have had 1 or 2 parous experiences of use of either method of modern contraception, as seen in the Table 1.

Table 1: Socio-demographic characteristics of the study participants

Variable	Frequency (n)	Percentage (%)
Age (Years)		
15-24	77	23.8
25-34	179	55.4
35-44	57	17.7
45 and above	10	3.1
Educational status		
No formal education	29	9.0
Primary	23	7.1
Secondary	125	38.7
Tertiary	146	45.2
Religion		
Islam	298	92.3
Christianity	25	7.7
Others	0	0.0
Marital status		
Married	319	98.8
Divorcee	4	1.2
Family setting		
Monogamy	228	70.6
Polygamy	91	28.2
Divorcee	4	1.2
Parity		
Nullipara	68	21.2
Primipara	67	20.2
Multipara	141	43.8
Grandmultipara	47	14.8
Number of leaving children		
None	76	23.5
One	64	19.8
2-4	133	41.2
5 and above	50	15.5

of the 323 women interviewed, 75.9% of them are aware of Bilateral Tubal Ligation (BTL) while only 23.2% of them are not aware of it as a family planning method, and 1.1% had no response, Figure 1. Out of the 75.9% of the respondent who are aware of BLT, the source of their information is;

24.5% got their information from their discussions with their fellow women friends, 19.2% from during their clinic visits, 7.4% from lectures, 2.5% from their spouses while the rest of 10.5% are from other sources. Figure 2.

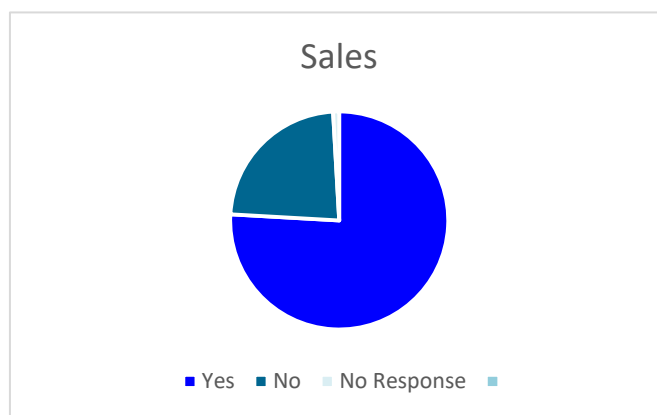


Figure 1. Awareness of BTL among study participants

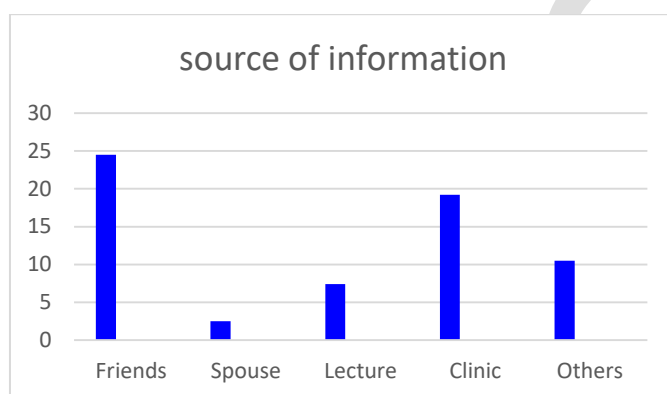


Figure 2: Source of information on BTL among the respondents

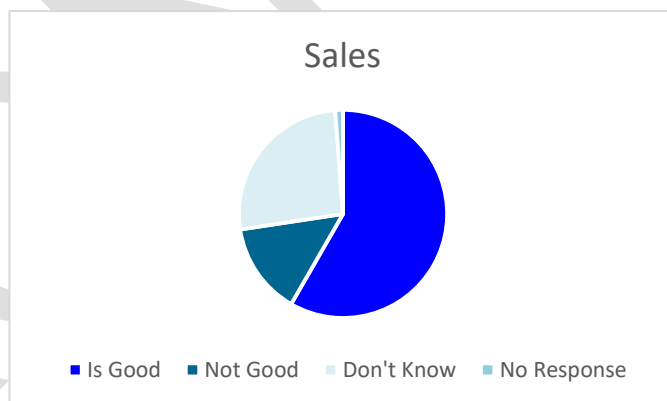


Figure 3: Perception on BTL among the study participants

Table 2: Association between demographic characteristics and acceptance of BTL

Variable	Yes	No	Chi-square
Age (years)			
15-24	38	39	0.39
25-34	93	87	
35-44	40	23	
45-above	1	0	
Total	172	142	
Level of education			
No formal Education	12	16	0.43
Primary	11	13	
Secondary	64	57	
Tertiary	85	56	
Total	172	142	
Religion			
Islam	155	124	0.59
Christian	17	9	
Others	0	9	
Total	172	142	
Parity			
Nullipara	0	0	0.47
Primipara	43	46	
Multipara	127	95	
Grandmultipara	2	1	
Total	172	142	
Number of leaving children			
None	43	34	0.39
One	28	36	
Two-four	83	60	
Five and above	18	12	
Total	172	142	

Majority of the women who accept bilateral tubal ligation as a form of contraception are between the ages of 25-34years, they had tertiary level of education, they are multiparous women (had 2-4 deliveries) and have between 2 to 4 leaving children, but there is no statistically significant relationship with the acceptance of BTL. This is as shown in the table 2 above

A hundred and seventy-one (52.9%) has good perception about BTL as a method of contraception, hence

majority of them (63.8%) agreed to accept BTL as a method of contraception after completing their reproductive carrier. Of the 47.1% of women with negative perception about BTL as a method, it was due to various reasons; 41.1% of this are due to the fear of surgery with p-value of 0.043, this show a statistically significant relation of negative perception of BTL and fair of the surgical procedure, 28.6% were due to the fear of regret, while the remaining are due to either the cost of the procedure, religious belief, cultural belief and non-specific reasons, as shown in Table 3.

Table 3: Reasons for not accepting BTL among the respondents

Variable	Frequency (n)	Percentage (%)	Chi-square (χ^2)
Fear of surgery	62	41.1	0.043
Fear of regret	43	28.6	
Cost of the procedure	15	9.9	
Against my Religious	12	7.9	
Against my culture	7	4.6	
I don't a reason	12	7.9	
Total	151	100	

4. Discussion

Contraception refers to a range of methods of family planning, both temporary and permanent, that are used to prevent pregnancy (WHO, 2025). Bilateral tubal ligation, which is a surgical procedure, is considered a permanent form of contraception (Kulier *et al*, 2003). It is typically offered to women who have either completed their desired family size or need to limit the size of their family due to medical condition (Kulier *et al*, 2003). This study assessed the knowledge, perception and acceptability of BTL among the 323 women participated in the study. The age being one of the important factors, the average age of the respondents was 31.60 ± 5.05 years. Similar studies conducted by Salufu *et al*, 2025, Yakubu *et al*, 2020 and Makhathini *et al*, 2021, Yakubu *et al*, 2020, provided supporting evidence for our findings regarding ages of the women in this study⁹.

Also, in this our study, 45.2% had tertiary level of education. About 92.3% and 74.3% of the study participants are Muslims and Hausas/Fulanis respectively, this is basically due the fact that the study was conducted in a Muslim and Hausa dominated environment. Also, we have found that 70.6% of the women are leaving in a monogamous family setting, 68.7% are multiparous and 41.2% have between 2 to 4 leaving children. These findings, are consistent with findings in the studies by Yakubu *et al*, 2020. And Adebimpe *et al*, 2016.

In this study, 75.6% of the women are aware of Bilateral Tubal Ligation (BTL), while the acceptance rate for BTL in this study was found to be 53.3% (172). However, there was statistically significant association between the womens's awareness of BTl and age, level of education, parity and number of leaving children. While 44.0% had poor knowledge of BTL. This is similar to the finding in a similar study by Yakubu *et al*, 2020 who found that 73% of their participants had knowledge of bilateral tubal ligation (BTL). However, a study from Port-Harcourt, Southern Nigeria by Enyindah *et al*, reported that the respondents demonstrated a low level of knowledge regarding bilateral tubal ligation (Enyindah *et al*, 2018).

We also found that, 53.2% of our study participants expressed positive perception towards BTL, hence, willing to accept the procedure when completed their desired family size. This may probably be due to the high level of education among our study participant. This is higher than what was reported by similar studies by Yakubu *et al*, 2020., Mutiher *et al*, 2007. and Adebimpe *et al*, 2016.

Of the 47.8% women who were unwilling to undergo BTL upon completion of their family size, 41.10% of them expressed that to do with fear of the surgery and there is statistically significant relationship between the fear of surgery and refusal of BTL as a method of family planning (p 0.043). About 28.6% also expressed the fear of regret to

the irreversible nature of the procedure as one of the reasons for their unwillingness to accept BTL, 9.90% were due to the cost of the procedure, 9.90% were due to religious beliefs and the rest of the respondents expressed cultural, spouse's refusals among their reasons not to accept BTL as a method of contraception. These findings are also similar to what was reported by Salut *et al*, 2025 from Ibadan, Southwestern Nigeria. On the contrary, Yakubu *et al*, 2020, reported that the primary reasons cited by the respondents for rejecting bilateral tubal ligation (BTL) were cultural beliefs (33.3%), feelings of regret (31.6%), religious beliefs (26.6%), and concerns about undergoing surgery (8.5%).

5. Conclusion

Though in this study, we found the acceptability of Bilateral Tubal Ligation (BTL) to be higher among women between the ages of 25-34 years, Muslims women, women with tertiary level of education and those with 2 to 4 leaving children, we found no statistically significant differences based on age, parity, education status or number of the leaving children.

However, the acceptability of BTL was significantly influenced by perception of the procedure for BTL. Our Findings were also supported by the other studies.16-18The study had several limitations, like participants may have been selected in a tertiary health facility located in an Urban area, which may have introduced bias and affected the study's results, when compared with general population. Participants may have given responses that they thought were socially acceptable rather than their true opinions, leading to inaccurate results. However, implement educational campaigns to increase awareness about bilateral tubal ligation (BTL) and address misconceptions about the procedure, as well as the religious, and cultural beliefs surrounding the procedure. Accurate and comprehensive continues counselling of women during antenatal period may go a long way in dispelling those misconceptions about BTL as a contraceptive method.

Abbreviations

WHO	World Health Organization
BTL	Bilateral tubal ligation
FTH	Federal Teaching Hospital
OPV	Oral Pollio Vaccine
BCG	Bacilli Calmette Gueril

Author Contributions

Umar Augie Ibrahim: Conceptualization, Methodology, Validation, Writing –Original Draft.

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Aisha Nana Adamu: Conceptualization, Methodology, Validation, Writing –Original Draft

Mustapha Ayodeji Saleem: Methodology, Data Curation Validation

Sa'idu Ibrahim: Methodology, Data Curation Validation.
Nathaniel Ketare: Data Curation, Writing-Original Draft.
Sharhabila Yakubu: Methodology, Data Curation.
Ganiyat Iyitayo Haliru: Methodology, Data Curation.

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Conflicts of Interest

The authors declare that they have no known competing financial interests, professional affiliations or personal relationships that could have appeared to influence the work reported in this paper.

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