

Knowledge, attitudes, and perceptions of antenatal women to postpartum bilateral tubal ligation at Greys Hospital, KwaZulu-Natal, South Africa

Bongumusa Steven Makhathini¹, Polycarpe N'djugumu Makinga², Randolph Robert Green-Thompson³

1. Department of Obstetrics and Gynecology, Greys Hospital, Pietermaritzburg, and Nelson R. Mandela School of Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban,, South Africa.
2. Department of Family Medicine, Ladysmith Hospital, Ladysmith and University Of KwaZulu-Natal, Durban, South Africa.
3. Department of Obstetrics and Gynecology, King Edward VIII, and Nelson R. Mandela School of Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa.

Abstract:

Objectives: To evaluate the associations between socio-demographic factors and the general knowledge, the attitudes and perceptions of women attending antenatal clinic at Greys Hospital regarding postpartum tubal ligation (BTL).

Methods: A prospective cross-sectional study describing the perceptions about BTL in 241 pregnant women was conducted.

Results: One hundred and sixty six (68.9%) participants needed to involve their partners before tubal ligation. Thirty five percent of 102 participants who would not have BTL against partner's wish were unemployed. Eighty three (34.4%) participants, mostly with secondary and tertiary education believed that successful reversal of BTL is guaranteed. Fifty two percent of participants, predominantly with no formal schooling and primary education levels were unaware of the risk of falling pregnant after BTL. Sixty seven (27.8%) participants, predominantly with primary education or no formal schooling believed that BTL protects against STIs and HIV. Seventy eight (32.4%) of participants would not have BTL due to religious beliefs, however, participants from the same religion gave different answers to the question.

Conclusion: The study showed a significant lack of knowledge on key points of BTL. Socio-demographic factors still influence this subject and should not be underestimated during counselling of the patients to reduce potential morbidity and litigation.

Keywords: Knowledge, attitudes, perceptions, antenatal women, tubal ligation.

DOI: <https://dx.doi.org/10.4314/ahs.v19i3.37>

Cite as: Makhathini BS, Makinga PN, Green-Thompson RR. Knowledge, attitudes, and perceptions of antenatal women to postpartum bilateral tubal ligation at Greys Hospital, KwaZulu-Natal, South Africa. *Afri Health Sci.* 2019;19(3): 2615-2622. <https://dx.doi.org/10.4314/ahs.v19i3.37>

Introduction

Low income countries, globally have a significant 26% of unmet need for modern family planning methods. Some 18% of women who want to avoid pregnancy are not using any contraception. The proportion of women with unmet needs for modern methods is 53% in Africa and 17% in the Southern African region.¹ This is concerning

because unplanned pregnancies have a significant negative impact on the health, social and economic systems of the countries. Effective and reliable contraception is important in prevention of unplanned pregnancies. Bilateral tubal ligation (BTL) is one of the most reliable forms of contraception, with a low failure rate of 0.5% in the first twelve months and 1.85% at 10 years of cumulative use.²⁻³

Corresponding author:

Bongumusa Steven Makhathini,
Greys Hospital Private Bag x9001
Pietermaritzburg South Africa 3200
Fax 086 647 4230
Telephone numbers: (033) 897 3292
Mobile phone: +27072 393 3751
Email: musamakh@yahoo.com

The postpartum period is a convenient and cost effective time to perform BTL. This can be done during the caesarean section (C/S) or as a sub-umbilical mini-laparotomy post vaginal delivery (VD) before uterine involution. It is common to find women with pregnancy-related high risk factors like advanced maternal age or other life threatening co-morbidities declining this method. On the other hand some young and low risk patients would opt for BT over reversible contraceptive methods. This could

be due to lack of correct information and misperceptions regarding BTL. The antenatal period is crucial in counselling patients about contraception, especially with regards to postpartum BTL. Effective counselling empowers patients to make an informed decision and to avoid improperly consenting to BTL.

Barriers to BTL include poor antenatal care. Some patients from low income settings do not attend nor have access to antenatal care facilities, book late and present when in labour. This affects proper counselling to impact knowledge and eliminate myths and misconception about BTL. It also affects the timing of taking consent for BTL. Shortage of resources such as theatre room availability, theatre time and theatre staff, contribute to the unmet need for post VD patients requesting BTL. Different sectors of the government, non-governmental organizations, the community and health care workers are the prominent enablers for BTL. Health care workers looking after pregnant women must advocate for the urgency of the procedure for post VD patients who request BTL. The aim of this study was to explore the associations between the socio-demographic factors (area of residence, education, religion and employment) and the general knowledge, attitudes and perceptions of women attending high risk clinic of Greys Hospital towards postpartum BTL. The researchers did not come across any published similar study which was conducted in Pietermaritzburg or in the province of KwaZulu-Natal. This makes the study to be the first of its kind to explore the knowledge, attitudes and perceptions of antenatal women to tubal ligation in the area.

Methods

This was a prospective cross-sectional study. Following ethical approval by the University of KwaZulu-Natal Biomedical Research Ethics Committee (REF: BE 314/12), permission to conduct the study was obtained from Grey's Hospital management. Greys Hospital is a tertiary institution situated in Pietermaritzburg, KwaZulu-Natal province of South Africa. It offers high risk obstetric services to patients referred by district and regional hospitals of the surrounding rural, suburban and township communities of area 2 of KwaZulu-Natal Province. Due to shortage of regional hospitals in this area, some district hospitals refer directly to Grey's Tertiary Hospital to improve service delivery. For the purpose of this study, the rural area refers to the area of residence with none to

minimal basic infrastructure, away from the city and commonly used by poor and low income class communities. Township refers to the area of residence with minimum to average basic infrastructure, commonly used by a combination of low and middle income communities. Suburban refers to areas of residence with efficient basic and social infrastructure, in between the cities and townships, and commonly used by middle and upper communities.

The questionnaire was formulated in English and isiZulu languages and focused on demographic variables which were thought to be influential to the topic as well as specific questions related to tubal ligation to test participants' background knowledge. Participants' identification data such as their name and surname were omitted to ensure confidentiality. The study was conducted from the 1st of April 2013 to the 31st of October 2013 using systematic random sampling on days convenient to the principal investigator. Both first time and repeat visit patients were recruited for the study. A written consent was obtained from the agreeable study participants. Questions were explained to the participants and they filled in the forms individually. Completed questionnaires were collected by the clinic staff involved in the study and handed over to the principal researcher to be locked safely.

Descriptive statistics were computed using SPSS version 21. Kolmogorov -Smirnov test was used to test the distribution of the data. Chi-square test of association was used for non-parametric distribution of data and a p value <0.05 was considered statistically significant. The reliability coefficient used in this survey was the Cronbach's alpha to assess how consistent and generalizable the results were, if we increased the sample size.

Results

Two hundred fifty six women participated in the study. Fifteen questionnaires were partially filled in with insufficient information for the objectives of the study, therefore excluded from the study. Two hundred and forty one questionnaires were analysed. Of the 241 study participants 55 (22.8%) were aged ≤ 25 years, 150 (62.2%) were aged 26 to 40 years and 36 (14.9%) were aged ≥ 41 years. Two hundred and five (85.1%) participants were Black Africans, followed by 21(8.7%), 11(4.6%) and 4(1.7%) of Indian, Coloured and White race participants respectively. Christian and Nazareth/Shembe religions were the most represented in the sample by 170 (70.5%) and 37

(15.4%) respectively. Most patients came from the rural areas 112 (46.5%) while 66(27.4%) and 63(26.1%) came from township and suburban areas respectively. The level of education of the participants can be summarized as 12.0%, 18.7%, 16.2% and 53.1% for “never” went to school, primary, secondary and tertiary education re-

spectively. One hundred and eighty six (77.1%) were unemployed compared to 55(22.9%) who had a job. One hundred and fifty seven (65.1%) participants were not married compared to 84(34.9%) who were married. The socio-demographic characteristics of the participants based on their area of residence are summarised in Table 1.

Table 1: Socio-demographic characteristics based on areas of residence

Socio-demographic Variable	Rural (N=112) n (%)*	Township (N=66) n (%)*	Suburban (N=63) n (%)*	Total (N=241) n (%)*
Age in years				
≤ 25	18 (7.5)	20 (8.3)	17 (7.1)	55 (22.8)
26-30	17 (7.1)	14 (5.8)	25 (10.4)	56 (23.2)
31-35	32 (13.3)	17 (7.1)	8 (3.3)	57 (23.7)
36-40	21 (8.7)	6 (2.5)	10 (4.1)	37 (15.4)
≥ 41	24 (10.0)	9 (3.7)	3 (1.2)	36 (14.9)
Religion				
Christian	70 (29.0)	55 (22.8)	45 (18.7)	170 (70.5)
Muslim	1 (0.4)	0 (0.0)	4 (1.7)	5 (2.1)
Nazareth/Shembe	23 (9.5)	9 (3.7)	5 (2.1)	37(15.3)
Hindu	3 (1.2)	0 (0.0)	4 (1.7)	7 (2.9)
Other	15 (6.2)	2 (0.8)	5 (2.1)	22 (9.1)
Education				
Never went to school	25(10.4)	2 (0.8)	2 (0.8)	29 (12.0)
Grade 1 -7	26 (10.8)	13 (5.4)	6 (2.5)	45 (18.7)
Grade 8-12	53 (22.0)	39 (16.2)	36 (14.9)	128 (53.1)
Tertiary	8 (3.3)	12 (5.0)	19 (7.9)	39 (16.2)
Employment status				
Employed	21 (8.8)	16 (6.7)	18 (7.5)	55 (23.0)
Unemployed	90 (37.5)	50 (20.8)	45 (18.8)	186 (77.1)
Marital status				
Single	85 (35.3)	43 (17.8)	29 (12.0)	157 (65.1)
Married	27 (11.2)	23 (9.5)	34 (14.1)	84 (34.8)

* Percentage calculated on the denominator of n = 241

Data related to parity was multimodal. While 74 participants (39.4%) reported to have one child, 32 participants

(17.0%) reported to have four or more live children. Information about previous mode of delivery is summarized in Table 2.

Table 2: Obstetric variables

Variable	n	%
Parity:		
0	53	22.0
1	54	22.4
2	43	17.8
3	38	15.8
≥ 4	53	22.0
Number of live children:		
0	15	8.0
1	74	39.4
2	38	20.2
3	29	15.4
≥ 4	32	17.0
Previous mode of delivery:		
Vaginal Delivery	136	56.4
Caesarean Section	52	21.6

One hundred and thirty two (54.8%) participants reported to have reached their desired family size, of which 15 (6.6%) were ≤ 25 years. There was a statistical significant association between the variables 'reaching desired family size' and 'parity' ($\chi^2 = 49.63$; $p = 0.00$). Thirty one (12.8%) of women ≥ 36 years of age had more than four live babies. One hundred and sixty three (68.5%) participants agreed to BTL once their desired family size was complete, of which 35 (14.5%) were participants ≤ 25 years and 60 (24.9%) were ≥ 36 years of age. However, 13 (5.4%) participants ≥ 36 years of age were not agree-

able to BTL after completing their desired family size. Eighty three (34.4%) participants believed that successful reversal of BTL is guaranteed should they desire future fertility; of which 25 (10.4%) were ≤ 25 years of age. One hundred and sixty six (68.9%) participants agreed that they needed to involve their spouses/partners in the decision of BTL and 102 (42.3%) stated that they would not have BTL done if their partners were opposed to the decision. Further details of findings on knowledge, attitudes and perceptions of participants on BTL are summarised in Table 3.

Table 3: Knowledge, attitude and perceptions of participants towards bilateral tubal ligation

Knowledge, attitude and perceptions related questions	Yes n(%)	No n(%)
Have you reached your target number of babies?	132 (54.8)	109 (45.2)
Do you want a permanent contraception in the form of BTL once your target is reached?	165 (68.5)	76 (31.5)
Does your religion allow you to have BTL?	163 (67.6)	78 (32.4)
Do you need to involve your spouse in the decision of BTL?	166 (68.9)	75 (31.1)
Can you still have BTL even if your spouse is against your decision?	102 (42.3)	139 (57.7)
Will BTL protect you from STIs/ HIV?	67 (27.8)	174 (72.2)
Is there a small risk of falling pregnant after BTL?	116 (48.1)	125 (51.9)
Can pregnancy occur outside your womb?	105 (43.6)	136 (56.4)
Are you allowed to change your mind about BTL before the procedure is done?	144 (59.8)	97 (40.2)
Will BTL negatively affect your sexual life	45 (18.7)	196 (81.3)
Is BTL reversal guaranteed if you need to conceive	83 (34.4)	158 (65.6)
What is your contraceptive alternative if BTL is not desired?		
Pills	49 (20.3)	
Injections	161 (66.8)	
Intrauterine contraceptive device	31 (12.9)	

BTL: bilateral tubal ligation; STIs: sexual transmitted infections; HIV: human immunodeficiency virus

The study found that 125 (51.9%) participants were unaware of the risk of becoming pregnant after BTL. This was more evident in participants with no formal education where 21(8.7%) were unaware of this risk versus 8(3.3%) who were aware of a possible risk, which was statistically significant ($p = 0.037$). Sixty-seven (27.8%) participants, believed that BTL protects against STIs/ HIV, which was statistically significant when cross tabulated to their level of education ($p = 0.001$).

Ninety seven (40.2%) women believed that they could not change their minds before the procedure is done. This finding was also statistically significant ($p = 0.001$). When

asked whether they believed that BTL will negatively affect their sex life, 45 women (18.8%) said “Yes” and 196 (81.2%) said “No”. The Chi-squared test of association of the finding on this belief and the level of education revealed a statistically significant association ($p = 0.004$). The Chi-square test of association between the variable level of education and the belief that the reversal of BTL was guaranteed was statistically significant ($p = 0.033$). Further results of cross-tabulation between the variable ‘level of education’ and variables related to knowledge, attitude and perceptions on postpartum BTL are summarised in Table 4.

Table 4: Impact of level of education to knowledge, attitudes and perceptions to post-partum BTL

Variables	Never went to school (N=29) n (%)	Grade 1-7 (N=45) n (%)	Grade 8-12* (N=128) n (%)	Tertiary Education (N=39) n (%)	p Value *
Can you still have BTL if your spouse is against your decision?					
Yes	12 (5.0)	30 (12.4)	73 (30.3)	24 (10.0)	0.176
No	17 (7.1)	15 (6.2)	55 (22.8)	15 (6.2)	
Is there a small risk of falling pregnant after BTL?					
Yes	8 (3.3)	19 (7.9)	71 (29.5)	18 (7.5)	0.037
No	21 (8.7)	26 (10.8)	57 (23.7)	21 (8.7)	
Will BTL protect you from STIs/ HIV?					
Yes	11 (4.6)	24 (9.9)	28 (11.6)	6 (2.5)	0.001
No	18 (7.5)	23 (9.5)	100 (41.5)	33 (13.7)	
Can you change your mind about BTL before the procedure?					
Yes	6 (2.5)	21 (8.7)	96 (39.8)	21 (8.7)	0.001
No	23 (9.5)	24 (10.0)	32 (13.3)	18 (7.5)	
Will BTL negatively affect your sexual life?					
Yes	5 (2.1)	12 (7.1)	18 (7.5)	5 (2.1)	0.004
No	23 (9.6)	28 (11.7)	110 (45.8)	34 (14.2)	
Is reversal of BTL guaranteed if you need to conceive?					
Yes	5 (2.1)	12 (5.0)	54 (22.4)	12 (5.0)	0.033
No	24 (10.0)	33 (13.7)	74 (30.7)	27 (11.2)	
What is your contraceptive alternative if BTL is not desired?					
Pills	5 (2.1)	7 (2.9)	27 (30.3)	10 (4.1)	0.506
Injections	23 (9.5)	33 (13.7)	34 (34.0)	23 (9.5)	
IUCD	1 (0.4)	5 (2.1)	19 (7.9)	6 (2.5)	

Note: * p-values for Chi squared test results; *Percentage calculated on the denominator of n = 241; BTL: bilateral tubal ligation; STIs: sexually transmitted infections; HIV: human immunodeficiency virus; IUCD: intrauterine contraceptive device

There was no statistical significance on these variables analysed based on area of residence. However, the study found that 65(26.9%) participants from rural area, 31(12.9%) from township and 30(12.4%) from suburban area had no knowledge of the possible risk of conceiving post BTL. Misperception that BTL would protect women against STIs (including HIV) was present in 33(13.7%), 20(8.3%) and 14(5.8%) participants from rural, township and suburban areas respectively.

The study also showed that 139(57.7%) participants agreed that they could not have BTL if their spouses or

partners were against their decision and 100(41.7%) of those participants come from the unemployed sub-group of the sample. However, 85(35.4%) of unemployed participants could have BTL irrespective of the spouse/partners' decision. The cross tabulation on this point was statistically significant (p= 0.03).

The results showed that there were different religious opinions regarding postpartum BTL. The majority of Christians and Hindus thought that BTL was allowed in their religious faith. On the other hand, more Muslims and Nazareth / Shembe women responded that their religion did not allow BTL.

Table 4: Bilateral tubal ligation and religion

Religion	My religion allows me to have BTL n (%)*		Total N(%)*
	Yes	No	
Christian	129 (53.5)	41 (17.0)	170 (70.5)
Muslim	2 (0.8)	3 (1.3)	5 (2.1)
Nazareth/Shembe	15 (6.2)	22 (9.2)	37 (15.4)
Hindu	5 (2.1)	2 (0.8)	7 (2.9)
Other	12 (5.0)	10 (4.1)	22 (9.1)
Total	163 (67.6)	78 (32.4)	241(100)

BTL: bilateral tubal ligation; * Percentage calculated on the denominator of n = 241

Discussion

The level of education, employment status and religious belief showed a statistically significant association with knowledge, attitudes, and perceptions of the study participants on postpartum BTL. It is therefore very important to explore and accommodate these factors whenever counselling on BTL is conducted, without compromising the quality and standard of counselling information. The area of residence did not show a statistical significant association with the knowledge, attitudes and perceptions of participants in the study, however, this could be associated with migration patterns of the population giving a diverse picture of participants' characteristics in those areas.

Sixty nine percent of the study participants preferred to have postpartum BTL after completing their family size. This is consistent with previous studies, which showed that tubal sterilization is one of the contraceptive methods of choice⁵. A significant number of participants below the age of 30 years believed that reversal of fertility is guaranteed post BTL. This is concerning because the risk of BTL regret can be as high as 20.3% for this age group^{6,7}. Regret can be verbalized by the patient, with or without signs of depression, patients requesting reversal of the procedure or requesting some assisted reproductive technique. Although the pregnancy rate following microsurgical reversal of BTL is 85.7% in women ≤ 35 years of age, irrespective of the previous sterilization technique used⁸, this procedure is not always readily available in public hospitals of low income countries due to limited resources. A small number of participants aged ≥ 36

years were not agreeable to BTL after completing their family size. This high risk group require ongoing family planning counselling in order to make informed decision.

The study found that 32.4% of participants compared to 16.67% in the literature regarded contraception as anti-religion⁵. Participants from the same religion gave different answers regarding BTL practices. This highlights the importance of a standardized, proper counselling on BTL irrespective of religious beliefs of the patient.

Our study found a higher 57.7% compared to 8.83% from the previous studies where spouses influenced the contraceptive method⁵. High unemployment rates in the sampled community may influence our findings. Although the involvement of the spouse/partner is recommended in family planning, patients must be aware that they can take a decision on their own. This is important in communities with poor spousal support in family planning. Patients must also be counselled about the fact that they can change their minds before the BTL procedure.

The finding of 27.8% of women who believed that BTL protects against STIs/ HIV was a concern. Women with tertiary education accounted for 2.5% of this finding. Patients need to be told that only consistent condom use or abstinence are capable of protecting against STIs and HIV.²

Another concerning finding was that of 51.9% of women who did not know about the possibility of falling pregnant post BTL. This may result in delayed presentation

to health care facilities and diagnosis of ectopic pregnancies. The CREST study showed that one third of post tubal sterilization pregnancies were ectopic⁹. Although previous studies showed either no change or improvement in sexual function, sexual desire, sexual satisfaction, coital frequency, and self-perceived femininity¹⁰, 19% of participants believed that BTL will affect their sexual life negatively.

The strength of the study is that it was conducted in high risk participants who are more likely to benefit from BTL. The gaps identified directly highlight the unmet need of contraception awareness to pregnant women and indirectly to the community in general. The researchers are of the opinion that Greys Hospital serves a demographically diverse population. This gives health care givers of the area a general idea of the population's knowledge regarding tubal ligation. The demographic profile in the study population reflects that of the general population in the province.

The study has its' limitations. It was conducted in a single tertiary health centre which may introduce selection bias. Most questions required YES/NO answers which increased the possibility of guesswork. The aim was to eliminate "I don't know" answer so as to make a practical scenario where respondents would make a decision based on what they knew and what they thought.

Conclusion

The study highlights the extent of the challenge regarding BTL in this population and possibly in other populations with similar characteristics. The findings of the study can be used to improve our local tubal sterilization and contraception strategies. This can reduce the risk of post tubal ligation regret, delayed consultations for ectopic pregnancies, unprotected sex leading to STIs and possible litigation to the health care worker for poor counselling. Extending BTL counselling and contraception awareness beyond antenatal women to the population in general is recommended to close the gap of lack of knowledge and

misperceptions. Different stakeholders of society must be involved to target all the influential demographic factors in order to improve awareness and change the mind set of the population.

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