Knowledge of Vasectomy and its Associated Factors Among Married Men in Debre Tabor Town, Northwest Ethiopia: A community Based Cross-sectional Study.

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Abstract

Background: - Even though vasectomy is one of the safest, simple and most effective family planning methods available for men, it is one of the least used contraceptive methods in developing world including Ethiopia. The main reason for low level use may be low knowledge about vasectomy among men. This study was therefore designed to assess knowledge of vasectomy and its associated factors among married men in Debre Tabor Town.

Methods: - A community based cross-sectional study was conducted among 418 married men from December 05 - 25, 2019. Simple random sampling technique was employed. Data was collected by face to face interview using structured and pre-tested questionnaire. Data was entered using Epi- Data version 4.2 and analyzed by SPSS version 23. The association between variables was analyzed using bivariable and multivariable logistic regression model. Finally variables having p-value < 0.05 at 95% CI were considered as statistically significant.

Results: A total of 418 participants were included with response rate of 98.8%. The mean age of participant was 38.06 (SD± 6.873) years. About 60.5% of men had ever heard about vasectomy. Men mentioned health care providers as main source of information. Among those who had ever heard, only 58.8% defined vasectomy correctly. About 25.6% equated vasectomy with castration and about 15.6% described as “it is making the man impotent. In this study, only 38.5% of men were knowledgeable about vasectomy. Multivariable logistic regression showed that completing secondary education (AOR= 4.70, 95% CI: 1.26–17.55), attending college and above (AOR=8.36, 95% CI: 2.41-28.97)), having 4 or more alive children (AOR=0.51, 95% CI: 0.29-0.89) and positive attitude (AOR= 2.47, 95% CI: 1.58-3.86) were significantly associated with knowledge of vasectomy.

Conclusions: In this study level of knowledge of married men about vasectomy was low. Educational status, number of children and attitude were statistically significant with men knowledge about vasectomy. Emphasis should be given on improving the educational status of men to improve their knowledge, and positively changing the men upbringing culture right from their childhood which will also improve their attitude towards vasectomy in the future.

Introduction

The number of world population is increasing from day to day. In 2050 it is expected that it will reach to 9.9 billion and Africa’s population will be more than double[1]. In Africa Ethiopia was the second populous country next to Nigeria with estimated population of 101.7 million in the mid-2016[2]. The country is also affected by high maternal morbidity and mortality related to unintended and unwanted pregnancies[2, 3]. The goal of family planning all over the world has attracted attention due to its importance in decision making about population growth and development issues[4]. Globally, using contraceptive potentially reduced maternal mortality by 44%[5].

Despite the 1994 International Conference on Population and Development (ICPD) in Cairo emphasized that, men's involvement in sexual and reproductive health issues is very imperative for better outcome and set clear directions to increase men's participation in family planning, male involvement in family planning is still very low in Africa [6–8].

Vasectomy is a men permanent contraceptive method after completing their desire number of children which is known and acceptable only in some developed countries of the world. Although it is safe and easy to perform, only 45 million couples worldwide rely on it[9, 10].

International health organizations in recent years have suggested that involvement of men on the utilization and promotion of contraceptive methods is very crucial to provide couples with more male-oriented contraceptive choices, such as vasectomy. Even though its procedure is simple and easy with a high success rate (> 99%) and minimal complications, it is underutilized around the world, especially in developing countries including Ethiopia [11–13].Studies in African countries showed that knowledge of vasectomy is low[14–16].

Ethiopia has a target plan to increase the contraceptive prevalence to 55% by the year 2020[17]. To achieve this goal the government in collaboration with other stack holders focuses on diversifying the FP method mix by increasing demand and access to long-acting and permanent methods[18].Due to this effort, contraceptive prevalence rate (CPR) was reached to 41% in 2019 from 35% in 2016, but the method mix is still dominated by short acting female dependent methods such as injectable (27%), followed by implants (9%)[19].

Different reviewed literature report showed that level of knowledge about vasectomy was associated with different variables [20–25]. Educational status, occupation, Cultural beliefs, societal norms, number of live children, and attitude were found to be predictors of level of knowledge about vasectomy.

According to 2016 Ethiopian demographic and health survey (EDHS) report only 11.3% married women and 23.5% married men were heard about vasectomy[26]. A more recent studies in Gondar Town and Dangila Town, Northwestern Ethiopia identified that only 13.3% and 44.8% of married men had good knowledge about vasectomy [24, 25] respectively. The reason for low level of vasectomy use in Ethiopia may be low level of knowledge about vasectomy. There are few studies on knowledge of married men about vasectomy in Ethiopia. The major one is the 2016 EDHS report. But this report assessed only whether men and women had heard about vasectomy. Therefore this study was designed to determine men's level of knowledge about vasectomy and identify factors associated with knowledge about vasectomy among married men in Debre Tabor Town, Northwest Ethiopia.

Methods

Study design an setting

Community based cross-sectional study design was conducted in Debre Tabor Town from December 05–25, 2019. The town is found in Amhara region and it is a capital city of South Gondar Zone, Northwest Ethiopia. It is located 665 kilometers Northwest of Addis Ababa (the capital city of Ethiopia), and 103 kms Northwest of Bahir Dar. The town has six small administrative units called kebeles with a total population of 92, 530 based on 2018 report of town administration[27].

Study population

All marred men whose wives were in reproductive age group living in all six kebeles of Debre Tabor Town were the study population. All married men whose wives were in reproductive age group in the town within the study period were included. Whereas married men whose wife were in reproductive age group who were critically ill (bed reddened), had already done vasectomy, had infertile wife, had wife with hysterectomy and live less than 6 months during data collection period in Debre Tabor Town were excluded from the study.

Sample size and sampling procedure

EPI-INFO version7.0 statistical software was used to calculate the sample size assuming that 44.8% of men were knowledgeable about vasectomy[25] ,95% confidence interval with 5% margin of error it becomes 380. By adding 5% non-response rate the final sample size was 418. Simple random sampling technique was applied to select 418 married men. A total of 14,088 households and 14,614 married men were living in the tow[27]. A household was sampling unit in each kebeles and samples were allocated proportionally to each kebeles based on their total household number. Household numbers with married men in each kebeles was found from the kebeles registration book. Then study households were selected from each kebeles through simple random sampling technique by using table of random numbers starting from kebele one from a random start point. The first household was selected in each kebele by using lottery method. One married man per household was interviewed. When two or more eligible men were found in one house hold, only one was interviewed by lottery method and if no eligible men were identified in the selected household, the next eligible household located in the clockwise direction was visited and included until we got the desired sample size.

Operational definitions

Knowledg e: - In this study knowledge about vasectomy was determined by using 9 knowledge related questions. A value of 1 and 0 was given for each correct and incorrect answer respectively and labeled as good knowledge; those individuals who answered at least 5 knowledge related questions and poor knowledge; those answered less than 5 knowledge related questions[25].

Attitude: - In this study attitude of study participants towards vasectomy was also determined by using 9 attitude related questions and labeled as positive attitude; those participants who scored greater than or equals to the mean score and negative attitude; those individuals who scored less than the mean score[28].

Data collection procedures and data quality control

Data were collected via face to face interview techniques using a structured, validated and pretested questionnaire prepared after intensive review of relevant literatures. The questionnaire was first prepared in English and then translated to local language Amharic for simplicity and back to English to maintain its consistency by two language expert individuals who speak both English and Amharic fluently. The information was collected on participants' socio-demographic characteristics, reproductive characteristics, knowledge related characteristics and attitude related characteristics. Pretesting of the questionnaire was done on 5% of participants (20 married men) in Gassay Town near to the study setting. During the pre-test, the questionnaire was assessed for its clarity, accuracy of the knowledge measured and comprehensiveness, readability and the optimal time for completing the interview. Modifications and corrections like; wording, logical sequence and skip patterns were done immediately based on the result. The data was collected by four diploma health professionals and supervised by two trained health professionals who had BSc. Data collectors and supervisors were trained for one day on aim of the study, method of data collection, contents of the questionnaire, how to keep confidentiality, responders' right, and informed consent before they start the data collection. The completeness and consistency of data was cross-cheeked, cleaned and compiled on a daily basis by supervisors and principal investigator. The overall activity was supervised by the principal investigator of the study.

Data Processing and analysis

The collected data were coded and entered by using Epi-Data version 4.2 and then exported to SPSS version 23 for analysis. Descriptive statistics analysis was carried out. Tables and percentages were used to describe the data .Bivariable logistic regression analysis was executed by computing odds ratio (OR) with 95% confidence interval to see the association between each independent and dependent variable. Then variables that showed association in binary logistic regression analysis and which have P-value less than 0.20 were entered into multivariable logistic regression model for further analysis by controlling confounding factors. Finally adjusted odds ratio (AOR) with 95% CI, P-value less than 0.05 was considered as statistically significant.

Ethical consideration

Ethical clearance was obtained from the institutional ethics committee of Debre Tabor University. In addition a support letter was granted from Debre Tabor Zonal Health Office and administrative office of the town. Participants of the study were informed about the purpose, objectives and their right to participate or not participate in the study and then written informed consent was obtained from each participant. Privacy and confidentiality were ensured by keeping all information anonymous.

Results

Socio-demographic characteristics

A total of 418 married men were participated in this study with response rate of 98.8%. Of these near to half of the respondents 197 (47.7%) were belonged to the age group of 31–40 years with a mean age of 38.06 (SD ± 6.873) years.

Majority of the participants, 400(96.9%) were Amhara by ethnicity and orthodox Christians followers, 365(88.4%). In addition, more than half of the participants, 266(64.4%) and one hundred ninety (46%) participants wife were attended college and above by their educational status. Two hundred fifty-one (60.8%) participants were civil servant by occupation (Table 1).

Reproductive characteristics of participants

Among the respondents, 146(35.4%) were living with their wife from 6–10 years with average duration of marriage 9.86 year. Two hundred fifty-eight (62.5%) of participants had three and more alive children. Majority of the study participants, 370(89.6%) were discussed about FP with their partner. One hundred twenty-four (30%) participants were completed their family size. Among 289(70%) participants who had not completed their family size, 210(72.2%) participants had a desire number of three children for their future life (Table 2).

Table 2: Reproductive characteristics of married men in Debre Tabor Town, Northwest Ethiopia, December, 2019(N = 413).

Variables	Frequency	Percent (%)
Duration of married year		
≤ 5 years	95	23.0
6–10 years	146	35.4
11–15 years	99	24
≥16 years	73	17.6
Number of living children		
≤3 children	258	62.5
>3 children	155	37.5
Discuss abort FP with partner		
Yes	370	89.6
No	43	10.4
Complete family size		
Yes	124	30.0
No	289	70.0
Future desire no of children(N = 289)		
≤ 3 children	210	72.2
≥4 children	79	27.8

Knowledge of study participants about vasectomy

More than half the participant 250 (60.5%) reported that they had ever heard about vasectomy. Of those who had ever heard health care providers 107(43%), colleagues 89(35.6%), mass media 71(28.4%) and volunteers 34(13.6%) were the main source of information. In this study, only 147(58.8%) participants defined vasectomy correctly as “it is a men permanent contraceptive method after completing their desire number of children” and about 64 (25.6) % defined vasectomy as ‘castration’. Similarly about 39(15.6%) described vasectomy “it is making the man impotent” (Table 3).

Table 3
knowledge of married men about vasectomy in Debre Tabor Town, Northwest Ethiopia, December 2019(N = 413).

Knowledge questions	Frequency	Percent (%)
Vasectomy is a contraceptive method by ligating the vas deference		
Yes	225	54.5
No	188	45.5
Vasectomy is permanent and irreversible?		
Yes	193	46.7
No	220	53.3
Vasectomy requires minor surgical procedure?		
Yes	200	48.4
No	213	51.6
Seminal fluid during ejaculation are present after vasectomy		
Yes	129	31.2
No	284	68.4
Do you know how vasectomy works?		
Yes	109	26.4
No	304	73.6
Vasectomy is done in Ethiopia without any charge		
Yes	135	32.7
No	278	67.3
Do you know where vasectomy service is available		
Yes	177	42.9
No	236	57.1
Do you know that who can use vasectomy as a family planning?		
Yes	203	49.2
No	210	50.8
If yes who are they(N = 203)		
All married men	32	15.8

Knowledge questions	Frequency	Percent (%)
Those who complete their family size	171	84.2

This study identified that, only 159(38.5%) of married men with 95% CI of (33.8–43.7) had good knowledge about vasectomy (Fig. 1).

Attitude of participants towards vasectomy

Two third of the study participants 259(62.7%) had negative attitude while 154(37.3%) had positive attitude towards vasectomy (Table 4).

Table 4
Attitude of married men towards vasectomy in Debre Tabor Town, Northwest Ethiopia, December 2019(N = 413).

Attitude questions	Agree (%)	Neutral (%)	Disagree (%)
FP is a responsibility of women	15(3.6)	2(0.5)	396(95.9)
Do you believe that vasectomy negatively affects sexual performance/desire	100(24.2)	232(56.2)	81(19.6)
Do you believe that vasectomy has series side effects	138(33.4)	213(51.6)	62(15.0)
Vasectomy is not acceptable in my religion	294(71.2)	52(12.6)	67(16.2)
Vasectomy is culturally unacceptable	273(66.1)	63(15.3)	77(18.6)
I am uncertain for the future pregnancy may be happen after vasectomy	82(19.9)	218(52.8)	113(27.4)
Vasectomy is similar with castration	134(32.4)	216(52.3)	63(15.3)
Vasectomy can cause physical weakness, cannot do hard work	38(9.2)	261(63.2)	114(27.6)
Vasectomy can ashamed the individual in the community	84(20.3)	132(32.0)	197(47.7)

Factors affecting level of knowledge about vasectomy among study participants

In binary logistic regression age, educational status, wife educational status, wife occupation, number of live children and attitude of participants towards vasectomy had significant association with level of knowledge about vasectomy. In multivariable binary logistic regression analysis, after adjusting other co-variables by using backward likelihood stepwise method; only educational status, number of live children and attitude remained statistically significant with participants' level of knowledge about vasectomy.

Participants who had completed secondary education were 4.70 times more likely to have good level of knowledge about vasectomy (AOR = 4.70, 95% CI: 1.26–17.55) as compared to those who did not attended formal education. Similarly, study participants who had attended college and above were 8.36 times higher the odds of having good knowledge about vasectomy (AOR = 8.36, 95% CI: 2.41–28.97) as compared to those who did not attend formal education.

Moreover participants who had 4 or more alive children were inversely correlate with level of knowledge of vasectomy (AOR = 0.51, 95% CI: 0.29–0.89) as compared to men who had less than or equals to three alive children. Married men who had positive attitude towards vasectomy were 2.47 times more likely to had good knowledge about vasectomy (AOR = 2.47, 95% CI: 1.58–3.86) as compared to their counterparts(Table 5).

Table 5
Bivariable and multivariable logistic regression on predictors of level of knowledge of married men about vasectomy in Debre Tabor Town Northwest Ethiopia, December, 2019 (N = 413).

Variables	Knowledge of vasectomy		COR (95%CI)	AOR (95%CI)
	Good	Poor		
	N (%)	N (%)		
Age				
21–30 years	25(32.9)	51(67.1)	2.288(0.602–8.698)	1.11(0.273–4.511)
31–40 years	89(45.2)	108(54.8)	**3.846(1.071–13.81)***	2.215(0.581–8.438)
41–50 years	42(34.1)	81(65.9)	2.42(0.659–8.892)	1.892(0.48–7.463)
≥51 years	3(17.6)	14(82.4)	1	1
Educational status				
No formal education	3(8.8)	31(91.2)	1	1
Primary	8(21.6)	29(78.4)	2.581(0.689–11.79)	2.833(0.657–12.222)
Secondary	23(30.3)	53(69.7)	**4.484(1.244–16.16)***	**4.702(1.26-17.552)****
College and above	125(47.0)	141(53.0)	**9.161(2.734–30.69)***	**8.364(2.414–28.979)****
Wife education				
No formal education	11(19.0)	47(81.0)	1	1
Primary	23(34.3)	44(65.7)	2.233(0.976–5.11)	1.439(0.561–3.69)
Secondary	41(41.8)	57(58.2)	**3.073(1.424–6.634)***	1.232(0.477–3.177)
College and above	84(44.2)	106(55.8)	**3.386(1.654–6.930)***	1.052(0.384–2.885)
Wife occupation				
House wife	50(30.5)	114(69.5)	1	1
Civil servant	49(40.8)	71(59.2)	1.574(0.961–2.576)	0.821(0.464–1.453)

AOR = adjusted odd ratio; CI = confidence interval; COR = crude odd ratio; ∗∗ = statistically significant

Variables	Knowledge of vasectomy		COR (95%CI)	AOR (95%CI)
	Good	Poor		
	N (%)	N (%)		
Private business	46(48.9)	48(51.1)	**2.185(1.294–3.688)***	1.698(0.955–3.017)
Employed at private sector	6(28.6)	15(71.4)	0.912(0.334–2.488)	0.771(0.259–2.291)
Student	8(57.1)	6(42.9)	**3.040(1.002–9.220)***	1.716(0.515–5.722)
No of alive children				
≤ 3	127(44.7)	157(55.3)	1	1
≥4	32(24.8)	97(75.2)	**0.408(0.257–0.648)***	**0.517(0.298–0.898)****
Discus with partner on FP				
No	11(25.6)	32(74.4)	1	1
Yes	148(40.0)	222(60.0)	1.939(0.948–3.968)	1.547(0.685–3.495)
Attitude				
Negative	75(29.0)	184(71.0)	1	1
Positive	84(54.5)	70(45.5)	**2.944(1.943–4.461)***	**2.475(1.586–3.862)****

AOR = adjusted odd ratio; CI = confidence interval; COR = crude odd ratio; ∗∗ = statistically significant

Discussion

Within the sphere of family planning, vasectomy is very often ignored, despite being one of the safest, simplest, and highly effective and least expensive contraceptive methods[6].

In this study, about 60.5% of married men were ever heard about vasectomy. This is higher than study done in Turkey which is (45.1%) participants were heard about vasectomy prior to the survey[11]. This might be due to difference in educational status of the participants since 64.4% of the respondents were Follows College and above but in the comparable studies only 21.4% were follows college and above. This finding is also higher than the 2016 EDHS report which indicated that only 23.5% married men had ever heard about vasectomy[26]. This may be due to time change since EDHS 2016 was done 5 years ago. The other reason is that our study is conducted in more urban setting while EDHS involves both rural

and urban areas. Increased effort of governmental and non-governmental organizations to increase acceptance of long acting family planning methods may be the other reason. The data collection method and the curiosity of the data collectors in this study may be the other reason, in the EDHS, the data collectors may be non-health professionals.

Among those who had ever heard about vasectomy, only 58.8% defined it correctly (they reported vasectomy as “a men permanent contraceptive method after completing their desire number of children”). Other responses in the survey clearly showed the presence of misconceptions about vasectomy among married men. Biases and misconceptions are the main reasons for low health service use. This is the reason why vasectomy use is low in Ethiopia. For example, about 25.6% and 15.6% of married men reported that vasectomy is similar with castration and it making the men impotent respectively.

This study showed that 38.5% of participants had good knowledge about vasectomy. This finding was in lined with the studies done in Nigeria revealed that 37.5% and 38% of the participants had good knowledge level about vasectomy[16, 21] respectively. In addition; our study finding was comparable with study conducted in east Wollega Zone of Oromia region, Ethiopia revealed that 35.3% of men were know about vasectomy[23].

But the finding of this study was lower than studies conducted in India showed that 70.2% and 44.6% of married men were knowledgeable about vasectomy[29, 30] respectively. The discrepancy may be due to difference in educational status of the participant since only 18.4% follow secondary school and 63.4% were Follows College and above but in the comparable studies76.1% follow secondary school and 75% were Follows College and above.

According to our study knowledge about vasectomy was also lower than cross sectional study conducted in Pakistan indicate that 85.6% of the participant had adequate knowledge about vasectomy[31]. This may be socio-demographic variation between the countries like educational status of participants since 74.3% of men in Pakistan were secondary and above in their educational level.

The finding of our study was higher than study conducted in Pakistan 11%[32]. The variation may be explained due to difference in perception towards vasectomy since 89% of married men in Pakistan perceived that vasectomy decreases male’s sexual desire but in our study only 41.2% of participants had misconception about vasectomy.

This finding is also higher than study conducted in Nigeria 27.5%[14]. The discrepancy may be explained due to difference in educational status since 64.4% of participant in this study attained college and above but in comparable study only 30.5% of participants attained above secondary school.

The result of this study revealed that as the educational status of participant increases level of knowledge acceptance concerning vasectomy also increase linearly. This finding is supported by study conducted in Gondar, northwest Ethiopia revealed that educational status (secondary and tertiary) were strongly associated with good knowledge of vasectomy[24]. This study was also consistent with a study

done in Dangila town Northwest Ethiopia[25]. Another study in Rwanda showed as the level of attained education increased, the level of knowledge also increased in the same fashion[22]. The reason for this might be educated men are more likely to be exposed to different media. They are also more likely to comprehend the information they obtained.

According to our study finding men with 4 or more children is inversely associated with good knowledge about vasectomy. Likewise, research conducted in Gondar Northwest Ethiopia also concluded that number of children was inversely correlates with knowledge of vasectomy[24]. The possible explanation for this finding might be as the numbers of children increase the men boozer about the economic issue that cost for his family considered costly and likely it result in family quarrels and tensions. It may also have a negative impact on accessing information and continued education.

The result of this study also showed that there was a positive relationship between attitude towards vasectomy and its level of knowledge of married men. It revealed that participants who had positive attitude towards vasectomy had a good level of knowledge about it. Likewise, study conducted in Nigeria showed that there is a significant association between participants attitude towards vasectomy and their level of knowledge about it[33]. Since attitude is a key factor that influence the knowledge, men with positive attitude towards vasectomy are better able to know about it and share responsibilities in FP practice with their partner. And also, further reason may be when the individual had positive attitude; they can break myths and misconception that were negatively affecting the knowledge about vasectomy like that of vasectomy is similar with castration.

Conclusion

In conclusion, the level of knowledge of married men was low in Debre Tabor Town Northwest Ethiopia. Educational status, number of alive children and attitude towards vasectomy were significantly associated with level of knowledge about vasectomy.

Recommendations

As per finding emphasis should be given on improving the educational status of men to improve their knowledge, and positively changing the men upbringing culture right from their childhood which will also improve their attitude towards vasectomy. This in turn would motivate more men to actively participate in family planning and readily accept vasectomy as a safe and effective method of family planning. We also recommend further researcher to come up with additional and detail findings especially on qualitative aspect.

Abbreviations

AOR
Adjusted Odds Ratio

CI
Confidence Interval
COR
Crude Odds Ratio
CPR
Contraceptive Prevalence Rate
EDHS
Ethiopian Demographic Health Survey

Declarations

Consent for publication

Not applicable for this publication

Availability of data and materials

The datasets used in this study are available from the corresponding author on request.

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Conflicts of Interest

The authors declare that they have no conflict of interests regarding the publication of this paper.

Ethical approval and consent for participate

Ethical clearance was obtained from the institutional ethics committee of Debre Tabor University. A support letter request of cooperation was written to the Debre Tabor Town administration. Written consent was obtained from each study participants. Confidentiality of information and privacy was maintained.

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Authors' Contributions

Alemu Degu and Fentahun Yenealem, inception designed the protocol, conduct data analysis, result interpretation, manuscript drafting, wrote the paper and revised the manuscript. Bekalu Getnet and Gedefaye Nibret participate on the data collection, the editorial and data entry and analysis. All authors read and approved the final paper.

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Figures

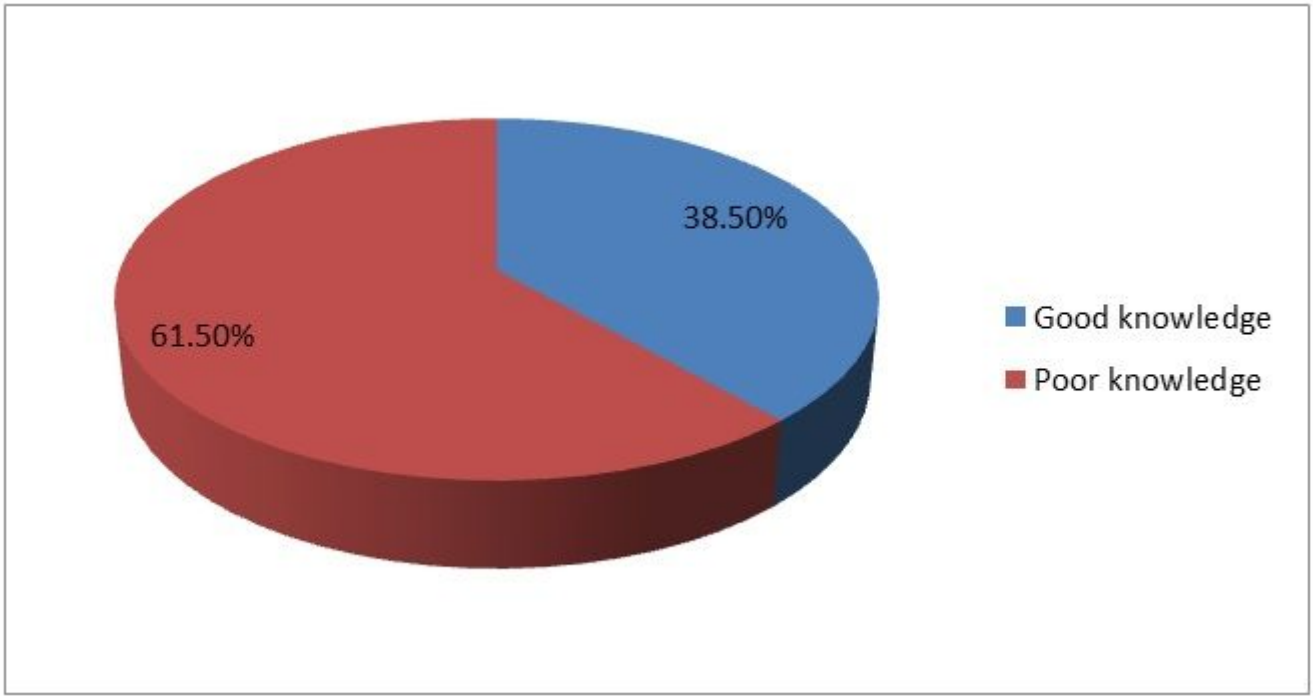

Figure 1

Level of knowledge of married men about vasectomy in Debre Tabor Town Northwest Ethiopia, December, 2019 (N=413).