Original Article

Knowledge, Perception, and Acceptance of Vasectomy among Male Teachers in Secondary Schools in Chikun Local Government Area of Kaduna State, Nigeria

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Abstract

Background: Family planning programs have historically been focused on women. This has reinforced the misconception that family planning is largely a woman's responsibility, with the man playing a peripheral role. Vasectomies are a safe, effective, permanent, and cost-effective modern method of contraception which has poor global uptake in spite of its many benefits. **Aim:** This study aims to assess the knowledge, perception, and acceptance of vasectomy among male teachers in secondary schools in Chikun Local Government Area of Kaduna State, Nigeria. **Materials and Methods:** A cross-sectional descriptive study was carried out using a pretested interviewer-administered questionnaire. A total of 178 male teachers were selected using a multistage random sampling technique. Data were collected and analyzed using SPSS version 23, and the results were presented using tables. Chi-square test of proportion was used to test for association. Fisher's exact test was used where conditions for Chi-square test were not met. The level of statistical significance was set at $P < 0.05$. **Results:** The mean age of the respondents was 37 ± 7.4 years. Only a small proportion of teachers (6.7%) had good knowledge on vasectomy. Only 5.6% of the teachers had a positive perception about vasectomy, and majority (92.1%) were unwilling to accept to carry out the procedure. The age of the teachers and number of children they had were found to have a statistically significant association with their acceptance of vasectomy ($P = 0.004$ and $P < 0.0001$, respectively). **Conclusion:** Majority of the respondents had poor knowledge and negative perception toward vasectomy with a lot of misconceptions. Acceptance of vasectomy was also poor. Intermittent awareness campaigns on family planning methods should be carried out in the community by the local government health authority, and vasectomy should be discussed in detail to improve awareness and dispel misconceptions.

Keywords: Acceptance, knowledge, male teachers, perception, vasectomy

Introduction

One of the major components of reproductive health is family planning, which has the overarching goal of preventing unwanted pregnancies, regulating desired pregnancies, and ensuring good health outcomes for mother and child.[1] The concept of family planning is not gender specific; it is geared toward couples whereby the male and female partners assume equal responsibility and accountability. However, in many societies globally, this is not the case; women are given a disproportionately higher responsibility regarding contraception, child spacing, and family building. As a result, family planning programs are focused on female involvement, with little or no attention being given to the male partner.[2] Women are believed to be the consumers of family planning methods while their male partners are expected to provide support; they are not considered users in their own right.[3] Research has shown that this strategy is severely flawed as evidenced by the poor contraceptive utilisation, especially in the low- and middle-income countries.[4]

Male involvement is key to the success of any family planning programme. This involvement includes but is not

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limited to the use of modern contraceptives. The suboptimal participation of males in family planning activities is tied to the perception that fertility and reproductive health are primarily the domain of women.[5] Research shows that males have been underrepresented in fertility and reproductive health studies; as such, establishing and implementing evidence-based male-centered reproductive health practices have been challenging. Existing male-centric contraceptive methods are the use of male condoms and vasectomies. Vasectomies are a safe, cost-effective, permanent, and 99.9% effective way to give men agency over their reproductive capacity and engage equitably in pregnancy prevention.[6] In spite of the benefits of this method, men who have achieved their desired family size are reluctant to accept it. The prevalence of vasectomies varies from country to country: 22% in Canada, about 21% in the UK, South Korea, and New Zealand; 11% in the United States; and only a few countries in sub-Saharan achieving more than 0.1% prevalence. Research findings show that poor knowledge, cultural beliefs, societal pressure, lack of spousal support, impotence, fear of surgical risks, and possible desire for children in future were the reasons proffered.[7] An added constraint for men in developing countries is that this method is not readily presented to them as a contraceptive. A study conducted among Nigerian resident doctors found that while 89.4% of them usually counselled for bilateral tubal ligation, only 5.8% of them gave vasectomy as an option.[8]

North-Western Nigeria is a region which faces the challenge of high fertility and low contraceptive use.[9] These health behaviours are associated with poor health outcomes; the driving factors are sociocultural, religious, and gender related. Males in this region are generally the decision-makers, which makes them crucial to the success of any family planning program. Evidence from research points to the fact that good knowledge and perception are precursors to adoption of favorable health practices. Teachers are uniquely positioned to pass on health knowledge to the younger generation; they are also well regarded in communities they serve. In view of the aforementioned, this study was carried out to determine the knowledge of, perception toward, and acceptance of vasectomies among male teachers in Chikun Local Government Area (LGA) in Kaduna State.

Materials and Methods

Study area

This study was performed in Chikun LGA of Kaduna State, Nigeria. It is located in the south-eastern part of the state. The LGA has 12 area councils, namely Chikun, Gwagwada, Kakau, Kujama, Kunai, Kuriga, Narayi, Nassarawa, Rido, Sabon Gari Nassarawa, Sabon Tasha, and Yelwa. It has an area of about 4,446 km^2 with an estimated population of 372,272 from the 2006 National Population Census which consists of 187,433 males and 184,839 females and a projected population of 502,500 in 2016.[10] The major ethnic group are the Gbagys who are the main indigenes and others include Atyap, Adara, Hausa/Fulani, Bajju, and Koro. The two main religions are Christianity and Islam with a few practising traditional religion. Inhabitants are mostly civil servants and traders who are also involved in farming activities. There are about 41 health-care centres, of which only 12 are publicly owned by the LGA and a total of 23 centers offer family planning services.

Study design

This was a descriptive cross-sectional study.

Study population

The study population comprised male teachers in secondary schools in Chikun LGA of Kaduna State.

Inclusion criteria

Married male teachers in secondary schools in Chikun LGA were included in this study.

Exclusion criteria

Teachers who were on leave at the time of the research were excluded from the study.

Sample size

Sample size for the study was determined using the formula:[11]

$n = z^2pq/d^2$

where

n = minimum sample size

z = confidence interval of 95% (1.96)

p = the proportion of the respondents with good knowledge on vasectomy from a previous study = 12% (0.12)[12]

q = complementary probability (1 − P) = 1 − 0.12 = 0.88

d = margin of error = 0.05

$n = (1.96)^2 \times 0.12 \times 0.88/(0.05)^2$

$n = 3.84 \times 0.12 \times 0.88/0.0025$

$n = 162$.

To correct for nonresponse, 10% was added

N = n + 10% of n

= 162 + 10/100 × 162

= 162 + 16.2

= 178.

Therefore, the sample size is 178.

Sampling method

A multistage random sampling technique was employed in this study.

Stage 1: Selection of area councils

The first stage involved selecting six area councils out of the 12 area councils using simple random sampling by balloting.

Stage 2: Selection of secondary schools

One secondary school was selected from each area council using simple random sampling by balloting.

Stage 3: Selection of the respondents

The number of respondents (teachers) to be selected in each school was determined by proportionate allocation. The eligible teachers were selected by simple random sampling by balloting.

School	Number of teachers (x)	Proportion (x/N)	NF (x/N)
GSS Sabon Tasha	93	0.22	39
GSS Narayi	80	0.19	33
GSS Rido	73	0.17	30
Filkom Secondary School	16	0.04	7
GSS U/Yelwa	75	0.18	32
GSS Kujama	89	0.20	37
Total	426	1.00	178

GSS: Government secondary school

Data collection tool

A semi-structured, pretested interviewer-administered questionnaire was used to collect data. The questionnaire comprised four sections. Section A had questions on background information, section B had questions on knowledge of vasectomy, section C had questions on perception, and section D had questions on acceptance of vasectomy.

The questionnaire was pretested on nine teachers of Government Secondary School, Kawo, who met the inclusion criteria, and adjustments were made to the questionnaire based on the observations noted during the pretest.

Data analysis

Data collected were analyzed using the Statistical Package for the Social Sciences IBM SPSS Statistics for Windows, Version 23.0. (Armonk, NY: IBM Corp). The Chi-square test of significance was used to confirm the observed relationship between predictor and outcome variables. Fisher's exact test was used where conditions for Chi-square test were not met. The results were presented in tables. The level of statistical significance was set at $P < 0.05$.

Measurement of indicators

Knowledge

The questions for knowledge were scored one mark for each correct answer while incorrect or "do not know" responses were scored zero. The scores were added up and the percentage scores were obtained. The scoring system graded knowledge as follows:[13]

Score	Grade
≥70%	Good
50%-69%	Average
<50%	Poor

Perception

A 5-point Likert scale of strongly disagree (SD), disagree (D), neutral (N), agree (A), and strongly agree (SA) with a scoring value of 0, 1, 2, 3, and 4, respectively, was used for positive statements. For negative statements, a maximum score of 4 was assigned to the SA option, 3 for agree (A), 2 for neutral (N), 1 for disagree (D), and 0 for SD. The total scores were computed for every respondent and scores >50% were considered a positive perception while scores <50% were considered a negative perception.[13]

Acceptance

Scores were assigned according to responses to the statements which reflected acceptance of vasectomy. For each question, a "yes" response was scored 1 and a "no" response was scored 0. Total scores were computed and positive responses to >50% of the questions were considered good acceptance while scores <50% were considered poor acceptance.[13]

Ethical consideration

Ethical approval was sought from the Ethics and Scientific Committee of Barau Dikko Teaching Hospital, Kaduna. Permission was sought from the Director, Kaduna Zonal Education Office, and also the principals of the selected secondary schools. Information about the study was provided to each participant and their anonymity, confidentiality of their responses, and voluntary participation were emphasized, following which informed consent was obtained from each participant.

Results

Table 1 shows that the age group with the highest proportion was the 31–34-year age group (27.5%) while the 55–60-year age group had the lowest proportion (1.7%). All the respondents were married and had tertiary education. Majority (96.6%) of the respondents had between 0 and 5 children. Table 2 shows that health workers are the most common (44.9%) source of information about vasectomies. Majority of the respondents knew that the procedure prevents pregnancy but does not prevent sexually transmitted infections (STI) (56.7% and 51.1%, respectively). Only 25.8% of them knew that the procedure is reversible. Only 6.7% of the respondents had good knowledge of vasectomies. Table 3 shows that 25.7% of the respondents do not view vasectomy as safe; 24.7% and 29.8% of the respondents strongly agreed and agreed, respectively, that vasectomy is like castration. Less than a quarter (22.5%) of the respondents agreed that it is an effective form of family planning. Table 4 shows that majority (94.4%) of the respondents have a negative perception of vasectomies. Table 5 shows that only 8.4% would consider having a vasectomy. Only 20.2% of the respondents would recommend the procedure to others. Majority (97.8%) of the respondents would choose other contraceptive methods. Only 7.9% of the respondents had a good acceptance score. Personal beliefs, fear of irreversibility, and fear of complications (41.0%, 39.3%, and 37.6%, respectively) were the most common reasons given for not accepting vasectomies. Table 6 shows that there was a statistically significant relationship ($P = 0.004$) between the age of the respondents and the acceptance of vasectomies. The relationship between the respondents' number of children and acceptance of the procedure was also statistically significant ($P < 0.0001$).

Table 1: Sociodemographic characteristics of respondents (*n*=178)

Variable	Frequency (%)
Age (years)	
25-30	30 (16.9)
31-35	49 (27.5)
36-40	46 (25.8)
41-45	25 (14.0)
46-50	13 (7.3)
51-55	12 (6.7)
56-60	3 (1.7)
Level of education	
Tertiary education	178 (100)
Marital status	
Married	178 (100)
Years of marriage	
1-10	147 (82.6)
11-20	24 (13.5)
21-30	6 (3.4)
31-40	1 (0.5)
Religion	
Christianity	167 (93.8)
Islam	11 (6.2)
Number of children	
0-5	172 (96.6)
6-10	6 (3.4)
Average monthly income (₦)	
20,000-40,000	62 (34.8)
41,000-60,000	66 (37.1)
61,000-80,000	30 (16.9)
81,000-100,000	20 (11.2)

Table 2: Distribution of the knowledge profile of respondents (*n*=178)

Variable	Frequency (%)
Source of information	
Mass media	38 (21.3)
Health workers	80 (44.9)
Friends	40 (22.5)
Literature	20 (11.2)
Knowledge on vasectomies	
Reversible procedure	46 (25.8)
Prevents pregnancy	101 (56.7)
Does not cause prostate cancer	53 (29.8)
Does not prevent STI	91 (51.1)
Less complicated than tubal ligation	50 (28.1)
Does not cause loss of libido	59 (33.1)
No sperm release after procedure	92 (51.7)
Minor surgical procedure	51 (28.7)
Potential for pregnancy soon after procedure	24 (13.5)
Does not cause erectile dysfunction	75 (42.1)
Knowledge grade	
Good	12 (6.7)
Average	129 (72.5)
Poor	37 (20.8)

STI: Sexually transmitted infections

Discussion

Vasectomies are effective, safe, permanent, and cost-effective means of modern contraception. However, the acceptance and uptake of the procedure is poor globally, with the lowest utilisation prevalence found in sub-Saharan Africa. Research shows that poor knowledge and perception of the procedure as well as some sociocultural factors affect the utilisation.

In this study, the mean age of the respondents was 37 ± 7.4 years which is similar to a study carried out in Delta State, Nigeria, which had a mean age of 37 ± 11.1 years.[14] All the respondents were married and had tertiary education. Their level of education is to be expected as tertiary level training is required to teach. Educational level has been found to be a driver for health outcomes as it is tied to understanding health information. The number of children that majority of the respondents have is lower than the National average. In view of this, the poor acceptance of this permanent method of contraception is to be expected. All the respondents had heard of the procedure; in view of the fact that they all have tertiary education, they are likely to have been exposed to information about modern contraceptives.[6,12] This study showed that health workers were the most common source of information which is similar to a study carried out in Ethiopia.[15] Information about this modern contraceptive coming from a health worker is the most ideal situation as the correct details will be passed along to the client. With accurate information, they can make informed decisions about the procedure.

Less than a tenth of the respondents in this study had good knowledge while majority had average knowledge about vasectomies. Similarly, a study conducted in Edo State found that only 7.4% of the respondents had good knowledge. Research has shown that adequate knowledge is a precursor to good perception and an increased likelihood of uptake of a desired health behaviour. Therefore, the suboptimal knowledge of vasectomies will likely play a role in its poor acceptance. This procedure is 99.9% effective and as such provides a solution to those who have achieved their desired family size.

An overwhelming majority of the respondents had a negative perception toward vasectomies. This finding is in contrast to studies carried out in Ogun State and Delta State.[7,16] The proportion of respondents with good knowledge in both studies surpassed that from this study; as such, it stands to reason that the proportion with good attitudes would be higher than the findings from this study. Acceptance and utilisation of modern family planning methods is also higher among the population from these regions.[9] This method is a more effective than condoms for preventing pregnancy and it is nonhormonal, thereby eliminating those attendant side effects. Although permanent contraceptive methods are not widely viewed as acceptable, tubal ligation (female sterilization which is more complicated) is more commonly practiced.[17]

Almost all the respondents had poor acceptance for vasectomies; this finding is in keeping with research from various parts of the globe.[8,13,17] Personal beliefs, fear of irreversibility, and

Table 3: Respondent's perception of vasectomies (*n*=178)

Variable	Frequency (%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Family planning is the wife's responsibility alone	22 (12.4)	29 (16.3)	34 (19.1)	56 (31.5)	37 (20.8)
Vasectomy is a safe form of family planning	29 (16.3)	39 (21.9)	42 (23.6)	46 (25.8)	22 (12.4)
Vasectomy is an effective form of family planning	40 (22.5)	45 (25.3)	40 (22.5)	35 (19.7)	18 (10.1)
Vasectomy has adverse health effects	29 (16.3)	46 (25.8)	52 (29.2)	33 (18.5)	18 (10.1)
Vasectomy is a better way of family planning compared to female sterilization	40 (22.5)	36 (20.2)	49 (27.5)	37 (20.8)	16 (9.0)
Vasectomy causes social stigma to the man	37 (20.8)	33 (18.5)	37 (20.8)	43 (24.2)	28 (15.7)
Vasectomy is like castration	35 (19.7)	49 (27.5)	27 (15.2)	34 (19.1)	33 (18.5)
Men who have done vasectomy do not lose their authority in the family	44 (24.7)	53 (29.8)	33 (18.5)	27 (15.2)	21 (11.8)
Vasectomy is not a cultural taboo	38 (21.3)	40 (22.5)	31 (17.4)	45 (25.3)	24 (13.5)
Vasectomy does not make a man promiscuous	32 (18.0)	44 (24.7)	50 (28.1)	34 (19.1)	18 (10.1)
Vasectomy is against your religious belief	33 (18.5)	26 (14.6)	40 (22.5)	60 (33.7)	19 (10.7)
A man who has had vasectomy will frequently fall sick	14 (7.9)	33 (18.5)	52 (29.2)	45 (25.3)	34 (19.1)
Vasectomy makes a man lose physical strength	20 (11.2)	26 (14.6)	38 (21.3)	52 (29.2)	42 (23.6)
Vasectomy is a good choice for couples who have completed their family size	46 (25.8)	47 (26.4)	46 (25.8)	22 (12.4)	16 (9.0)

Table 4: Aggregated perception score for respondents (*n*=178)

Grade	Frequency (%)
Positive	10 (5.6)
Negative	168 (94.4)

Table 5: Acceptance of vasectomies among the respondents

Variable	Frequency (%)
Potential uptake of vasectomy (*n*=178)	
Yes	15 (8.4)
No	163 (91.6)
Recommend vasectomy to others (*n*=178)	
Yes	36 (20.2)
No	142 (79.8)
Choose other methods (*n*=178)	
Yes	174 (97.8)
No	4 (2.2)
Acceptance grade (*n*=178)	
Good	14 (7.9)
Poor	164 (92.1)
Reasons for lack of acceptance (*n*=163)	
Fear of irreversibility	70 (39.3)
Personal beliefs	73 (41.0)
Fear of complications	67 (37.6)
Poor health system	27 (15.2)
It is against my cultural beliefs	5 (2.8)
It is against my religious beliefs	19 (10.7)
Fear of stigma	24 (13.5)

fear of surgical complications were the most common reasons given for nonutilisation of the method. Poor acceptance for vasectomies means that the only modern contraceptive measure available to men is the condom. However, condom use has been found to be low among married or cohabiting couples.[18] Reasons for poor use range from cost, lack of privacy when purchasing them, social stigma, reduced sensitivity to aversion to condom use.[19] The poor uptake of male contraceptive methods leads to women assuming a disproportionately higher reponsibility for child spacing.

The age of the respondents was found to have a statistically significant relationship with acceptance of vasectomies. This is similar to a study conducted in Nepal[20] and Ethiopia,[13] which showed that acceptance increased with the younger age group. The younger age group are more accepting of newer ideas and open to change as opposed to the older age group which are more likely set in their ways.[21] There was also a statistically significant relationship between number of children and acceptance of vasectomies. This is similar to the findings in a study in the United States where number of children as well as sex ratio determined their uptake of vasectomies. Men with more sons were more likely to be willing to undergo the procedure than those with more daughters or no sons.[22] Studies in Eswatini and Ethiopia also showed similar findings. These findings point to the fact that vasectomy is a viable option for those who have achieved their family size.

Conclusion

Vasectomies are one of only two choices available to men in terms of modern contraceptives. It is, however, the least utilized contraceptive method, especially in sub-Saharan Africa. This study found that knowledge, perception, and acceptance of vasectomies were suboptimal. It would be beneficial to raise awareness among men about the procedure so as to demystify it and correct any misinformation. This method gives men a good opportunity to be a constructive part of the family planning decision.

Table 6: Relationship between sociodemographic factors and acceptance of vasectomies among the respondents (*n*=178)

	Acceptance score		Test statistic (Fisher's exact, df, *P*)
	Good, *n* (%)	Poor, *n* (%)	
Age			
25-30	1 (3.3)	29 (96.7)	18.851, 6, 0.004
31-35	1 (2.0)	48 (98.0)	
36-40	4 (8.7)	42 (91.3)	
41-45	1 (4.0)	24 (96.0)	
46-50	3 (23.1)	10 (76.9)	
51-55	4 (33.3)	8 (66.7)	
56-60	0	3 (100.0)	
Number of children			
0-5	11 (6.4)	161 (93.6)	15.212, 1, <0.0001
6-10	3 (50.0)	3 (50.0)	

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Conflicts of interest

There are no conflicts of interest.

References

1. Male Participation in Family Planning: Human Behaviour Perspective – PubMed. Available from: https://pubmed.ncbi.nlm.nih.gov/27005710/. [Last accessed on 2021 Oct 10].
2. Kantorová V, Wheldon MC, Ueffing P, Dasgupta AN. Estimating progress towards meeting women's contraceptive needs in 185 countries: A Bayesian hierarchical modelling study. PLoS Med 2020;17:e1003026.
3. Hardee K, Croce-Galis M, Gay J. Are men well served by family planning programs? Reprod Health 2017;14:14.
4. Family Planning/Contraception Methods. Available from: https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception. [Last accessed on 2021 Oct 10].
5. Grace B, Shawe J, Johnson S, Stephenson J. You did not turn up… I did not realise I was invited…: understanding male attitudes towards engagement in fertility and reproductive health discussions. Hum Reprod Open 2019;2019:hoz014. https://doi.org/10.1093/hropen/hoz014.
6. White AL, Davis RE, Billings DL, Mann ES. Men's vasectomy knowledge, attitudes, and information-seeking behaviours in the southern United States: Results from an exploratory survey. Am J Mens Health 2020;14:1557988320949368. doi:10.1177/1557988320949368.
7. Christiana O, Sonachi C, Chinomso N. Knowledge and attitude of men about vasectomy as a method of family planning among married men working in Babcock University, Ogun State. Int J Nurs Midwifery 2014;7:30-5. Available from: http://www.academicjournals.org/IJNM. [Last accessed on 2021 Oct 10].
8. Ebeigbe PN, Igberase GO, Eigbefoh J. Vasectomy: A survey of attitudes, counselling patterns and acceptance among Nigerian resident gynaecologists. Ghana Med J 2011;45:101-4.
9. National Population Commission (NPC) [Nigeria], ICF. Nigeria Demographic Health Survey 2018. DHS Progr ICF Rockville, Maryland, USA; 2019. p. 748. Available from: https://dhsprogram.com/publications/publication-fr359-dhs-final-reports.cfm. [Last accessed on 2021 Oct 11].
10. Chikun (Local Government Area, Nigeria)–Population Statistics, Charts, Map and Location. Available from: https://www.citypopulation.de/php/nigeria-admin.php?adm2id=NGA019002. [Last accessed on 2021 Oct 10].
11. Ibrahim T. Sample Size Determination. Research Methodology and Dissertation Writing for Health and Allied Health Professionals. Abuja, Nigeria: Cress Global Link Limited; 2019. p. 75.
12. Temach AJ, Fekadu GA, Achamyeleh AA. Educational status as determinant of men's knowledge about vasectomy in Dangila town administration, Amhara region, Northwest Ethiopia. Reprod Health 2017;14:54.
13. Nesro J, Sendo EG, Yesuf NT, Sintayehu Y. Intention to use vasectomy and associated factors among married men in Addis Ababa, Ethiopia. BMC Public Health 2020;20:1228.
14. Agofure O, Okandeji-Barry O. Knowledge and perception of vasectomy among male staff of Novena University Ogume, Delta State, Nigeria. J Nurs Health Sci 2018;7:71-6.
15. Ayele AD, Yenealem F, Bahir B, Kassa BG, Mihretie GN. Knowledge of Vasectomy and its Associated Factors Among Married Men in Debre Tabor Town, Northwest Ethiopia: A Community Based Cross-Sectional Study; 30 July, 2020. Available from: https://www.researchsquare.com. [Last accessed on 2021 Oct 11].
16. Otovwe A, Okandeji-Barry O. Knowledge and perception of vasectomy among male staffs of Novena University Ogume Delta State Nigeria. J Nurs Health Sci 2018;7:71-6. Available from: http://www.iosrjournals.orgwww.iosrjournals.org. [Last accessed on 2021 Oct 12].
17. Vasectomy an Option for African Men in Family Planning |PRB. Available from: https://www.prb.org/resources/vasectomy-an-option-for-african-men-in-family-planning/. [Last accessed on 2021 Oct 12].
18. Nasrullah M, Oraka E, Chavez PR, Johnson CH, DiNenno E. Factors associated with condom use among sexually active US adults, national survey of family growth, 2006-2010 and 2011-2013. J Sex Med 2017;14:541-50.
19. Sarkar NN. Barriers to condom use. Eur J Contracept Reprod Health Care 2008;13:114-22.
20. Dayanand G. An assessment of knowledge and attitude of vasectomy in adult males: A crosssectional study from Pokhara, Western Nepal. Med Sci 2014;2014:164-70.
21. Currie C, Hurrelmann K, Settertobulte W, Smith R, Todd J. Health and Health Behaviour among Young People. Health Behaviour in School-Aged Children: WHO Cross-National Study (HBSC) International Report. Health Promotion and Investment for Health World Health Organization Regional Office for Europe. WHO Policy (1); 2000. p. 1-132. Available from: http://www.ruhbc.ed.ac.uk/hbsc. [Last accessed on 2021 Oct 12].
22. Lamberts RW, Guo DP, Li S, Eisenberg ML. Infertility the Relationship Between Offspring Sex Ratio and Vasectomy utilisation; 2016. Available from: http://dx.doi.org/10.1016/j.urology0.2016.11.039. [Last accessed on 2021 Oct 12].