







## Exploring barriers to vasectomy adoption among married men in Dadra and Nagar Haveli

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### ABSTRACT

**Introduction and aim.** Vasectomy was introduced in India in 1992 and is the most effective, simple, and safe permanent method of contraception yet its use is very limited among the population. The study's objectives were to assess the knowledge, attitude, and perception towards vasectomy and the barriers to adoption among married men in Dadra and Nagar Haveli.

**Material and methods.** A cross-sectional hospital-based study was conducted on married male attendants of patients and data were collected on sociodemographic details, knowledge regarding vasectomy, their attitude and perceptions towards vasectomy, and their intention of using vasectomy in the future.

**Results.** Out of 300 participants, 258 (86%) participants have heard of vasectomy as a contraceptive method, and only one participant has undergone vasectomy. The majority (285; 95%) of the participants agreed that family planning is also a responsibility of males while nearly two-third (185; 61.7%) of them were not willing to undergo vasectomy in the future. Procedure-related factors, post-procedure-related factors, social factors, availability of alternate contraceptive methods, and preference for tubectomy were the barriers to the adoption of vasectomy.

**Conclusion.** There is a need to provide correct information and counseling about vasectomy and non-scalpel vasectomy to eligible couples to increase the acceptance of vasectomy as a safe, effective, and cheaper method of contraception.

**Keywords.** attitude, barriers, knowledge, married men, perception, vasectomy

### Introduction

India initiated the National Family Planning Programme in 1952, encompassing a range of scientifically tested and approved contraceptive methods, supported by strategic implementation ideologies.<sup>1</sup> Among the various methods introduced, sterilization emerged as the most effective permanent solution within the Indian community. Despite vasectomy being a simpler surgical procedure, more cost-effective, and associated with fewer complications, a higher prevalence of tubectomy is shown as compared to vasectomy in India.<sup>2</sup> Between

1960 and 1977, family planning in India predominantly relied on methods like vasectomy and condom use, with men accounting for over 50% of all family planning users. However, attempts to aggressively promote vasectomy during emergencies had adverse consequences for the program's success. Following the shortcomings of this camp-based approach, a combination of positive and negative incentives, along with compulsory sterilization, contributed to a shift in preference towards permanent family planning methods. This shift ultimately led to the widespread adoption of female

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sterilization methods.<sup>3</sup> Vasectomy, which was once the favored choice, now contributes to less than 5% of the total sterilization cases annually. This trend is further supported by data from the NFHS-5 Report, which indicates that vasectomy usage stands at 0.3%, while female sterilization accounts for 37.9%.<sup>4</sup>

To be motivated to use vasectomy services, an individual or couple first needs accurate knowledge of and positive attitudes toward vasectomy.<sup>2</sup> The inclusion of NSV (No-Scalpel Vasectomy) in the National Family Planning Programme of India was officially announced in March 1992. NSV neither requires any cut on the skin with a scalpel blade nor any skin stitch, after the procedure is completed. It is a much less painful and faster procedure than conventional vasectomy. However, over the years, the utilization of male sterilization methods has remained relatively low. One of the reasons for the low and declining use of vasectomy is health professionals' lack of knowledge, misinformation, and personal dislike of vasectomy or untested presumptions about what men thought and wanted.<sup>5</sup>

## Aim

This study aims to address the existing research gap by exploring the knowledge, attitudes, and perceptions regarding vasectomy among married men residing in the Dadra and Nagar Haveli district.

## Material and methods

### Study design

A cross-sectional descriptive study was conducted in a tertiary care hospital in Dadra and Nagar Haveli district. The duration of the study was from August to November 2022.

### Study subject

Male attendants of patients coming to the outpatient department, aged 22–60 years, married, have at least one child whose age is above one year, and are willing to give consent were considered as the target population. Study participants with critically ill patients and those who are not willing to give consent were excluded from the study.

### Sample size

In the determination of an appropriate sample size for our research study, we drew upon valuable insights from a prior investigation conducted by Shrivastava et al. [6], which reported that 78.9% of the population possessed knowledge about vasectomy. To ensure a robust estimation with a desirable margin of error, we employed the sample size calculation formula,  $N = 4pq/d^2$ , where  $p$  represents the proportion (78.9%), and  $d$  signifies the absolute error (5%). This meticulous calculation yielded a sample size of 266. In anticipation of potential non-re-

sponses, we prudently factored in a 10% non-response rate, thereby culminating in a final sample size of 300 participants for our study.

### Sampling procedure

Male participants visiting the outpatient department across various specialties were selected using a simple random sampling method. On a daily basis, the first 2–3 participants were selected randomly and were interviewed using a pre-designed, pre-tested, and semi-structured questionnaire that was originally prepared in English and later translated into Hindi and Gujarati. The questionnaire consisted of three sections. The first section collected sociodemographic details of the participants, such as the number of children they have, and the duration of marriage. The second section focused on contraceptive use and assessed the participants' knowledge regarding vasectomy and No scalpel vasectomy. It also included questions about eligibility criteria for vasectomy, sources of information, and other related topics. The third section aimed to evaluate the participants' attitudes and perceptions towards vasectomy using a three point Likert scale (Agree, Disagree and Don't know). Contraceptive usage was considered if either of the partners was using any method of contraception, including natural methods.

### Statistical analysis

The responses were entered into a computer using MS Excel for analysis. Frequencies of all variables were generated to identify any errors or missing data, and data-cleaning procedures were performed accordingly. The data was presented using various descriptive representations, such as tables and charts, as well as inferential statistics. Descriptive statistics, including frequencies, means, and standard deviations (SD), were utilized to summarize the data. To gain insights into the reasons behind the unwillingness of married men to undergo vasectomy, an analysis was conducted on qualitative responses provided by the participants. Through this analysis, the responses were categorized into different themes and categories based on the patterns identified in their answers.

### Ethical considerations

Permission was obtained from the Institutional Ethics Committee (DMHS/IEC/2016/214/1237) before commencing the study and written informed consent was obtained from every participant prior to their recruitment into the study. To ensure confidentiality, the identities of the respondents have been kept anonymous. Following the interviews, participants received counseling and comprehensive health education on vasectomy, including its benefits.

**Table 1.** Socio-demographic information of participants (n=300)

Variables	Frequency (%)
<b>Age group (years)</b>	
22-30	126 (42)
31-40	149 (49.7)
≥41	25 (8.3)
<b>Residence</b>	
Urban	82 (27.3)
Semi-urban	77 (25.7)
Rural	141 (47)
<b>Education</b>	
Primary	20 (6.7)
Upper primary	39 (13)
Secondary	62 (20.7)
Higher secondary	80 (26.7)
Graduate	79 (26.3)
Post graduate	8 (2.7)
Illiterate	12 (4)
<b>Religion</b>	
Hindu	270 (90)
Muslim	26 (8.7)
Christian	4 (1.3)
<b>Occupation</b>	
Unemployed	2 (0.7)
Unskilled	13 (4.3)
Semiskilled	272 (90.7)
Skilled	13 (4.3)
<b>Total family members</b>	
≤4	196 (65.3)
>4	104 (34.6)
<b>Socioeconomic status</b>	
Upper	56 (18.7)
Upper middle	133 (44.3)
Lower middle	79 (26.3)
Upper lower	22 (7.3)
Lower	10 (3.3)
<b>Age of spouse (years)</b>	
18-25	7 (2.3)
26-30	226 (75.3)
31-35	64 (21.3)
>40	3 (1)
<b>Education of spouse</b>	
Primary	18 (6)
Upper primary	37 (12.3)
Secondary	64 (21.3)
Higher secondary	84 (28)
Graduate	52 (17.3)
Post graduate	11 (3.7)
Illiterate	34 (11.3)
<b>Occupation of spouse</b>	
Housewife	279 (93)
Working women	21 (7)
<b>Duration of marriage</b>	
<5	115 (38.3)
6-10	111 (37)
11-15	49 (16.3)
>15	25 (8.3)
<b>Total children born</b>	
≤2	238 (79.3)
>2	62 (20.7)
<b>Total number of sons</b>	
One	173 (57.7)
More than one	60 (20)
None	67 (22.3)

## Results

### *Socio-demographic and reproductive health characteristics*

A cross-sectional study was conducted at a tertiary care hospital, involving 300 married men to evaluate their knowledge and attitude towards vasectomy. The mean ( $\pm$ SD) age of participants was 32.6 ( $\pm$ 5.6) years. Among the participants, 49.7% (149) fell within the 31-40 age group, and 47% (141) resided in rural areas. Approximately 26.3% of the men had completed their graduation, and the majority of them (90%) identified as Hindu. According to the BG Prasad classification, half of the participants belonged to socioeconomic status (SES) class II. The majority (90.7%) were engaged in semiskilled work. (Table 1)

Regarding their spouses, around 75.3% (226) were aged between 26 and 30 years, and the majority (93%) were homemakers. Around 38.3% (115) of the participants had been married for less than five years, while 79.3% (238) had two or fewer living children at the time of the survey (Table 1).

### *Contraceptive use and knowledge regarding the vasectomy method*

Out of the total participants, 185 (61.7%) reported using contraception. Among the contraceptive users, nearly half of them (89; 48.1%) relied on male condoms, followed by female sterilization (51; 27.5%), natural methods (17; 9.2%), oral pills (14; 7.5%), intrauterine devices (8; 4.3%), and injectable contraceptives (1; 0.5%). Additionally, five participants (5.9%) reported using condoms in combination with other methods. While 258 (86%) participants had heard of vasectomy as a contraceptive option, only one participant had undergone the procedure. Table 2 shows various sources through which the participants obtained information about vasectomy.

Among the total participants, 80 (26.7%) individuals had prior knowledge of non-scalpel vasectomy, and out of those, 34 (11.3%) were aware of its specifics. A majority of participants (184; 61.3%) correctly identified vasectomy as a permanent method of contraception. However, only 34 (11.3%) men were aware of the eligibility criteria for undergoing vasectomy. Among this group, 9 (26.4%) knew that the age criterion is being over 21 years old, 18 (53%) recognized that having two living children is a prerequisite, and 20 (58.8%) participants acknowledged that being married is a requirement. The majority of the participants (256; 85.3%) were unaware of the number of outpatient department (OPD) visits needed for a vasectomy.

### *Attitude and perception of participants towards vasectomy*

The majority (285; 95%) of the participants agreed that family planning is a responsibility that extends to males.

**Table 2.** Contraceptive use and knowledge regarding vasectomy method (n=300)<sup>a</sup>

Variables	Frequency (%)
<b>Current contraceptive use</b>	
Yes	185 (61.7)
No	115 (38.3)
<b>Type of contraceptive use (N=185)</b>	
Female sterilization	50 (27)
Intrauterine device	8 (4.3)
Male condoms	89 (48.1)
Oral contraceptives	14 (7.5)
Injectable	1 (0.5)
Male sterilization	1 (0.5)
Natural methods	17 (9.2)
Multiple methods	5 (5.9)
<b>Heard of vasectomy as a method of contraception</b>	
Yes	258 (86)
No	42 (14)
<b>Source of information (n=258)*</b>	
Friends/family	158 (61.2)
Doctor/nurse	110 (42.6)
TV advertisements	94 (36.4)
Internet	85 (32.9)
Newspaper	59 (22.8)
Magazine	13 (5)
Radio	6 (2.3)
Others	5 (1.9)
<b>Heard of non-scalpel vasectomy</b>	
Yes	80 (26.7)
No	220 (73.3)
<b>Aware about non scalpel vasectomy</b>	
Yes	34 (11.3)
No	266 (88.7)
<b>Aware of vasectomy as permanent method</b>	
Yes	184 (61.3)
No	116 (38.7)
<b>Aware of eligibility criteria of vasectomy</b>	
Yes	34 (11.3)
No	266 (88.6)
<b>Age range for vasectomy (years) (n=34)</b>	
≤21	1 (3)
≥21	9 (26.4)
Don't know	24 (70.5)
<b>Prerequisite no. of children (n=34)</b>	
Two children	18 (53)
At least 1 son	2 (5.9)
Don't know	15 (44.1)
<b>Marital status (n=34)</b>	
Married	20 (58.8)
Unmarried	4 (11.7)
Don't know	10 (29.5)
<b>OPD visits needed for vasectomy</b>	
≥5	42 (14)
< 5	2 (0.7)
Don't know	256 (85.3)

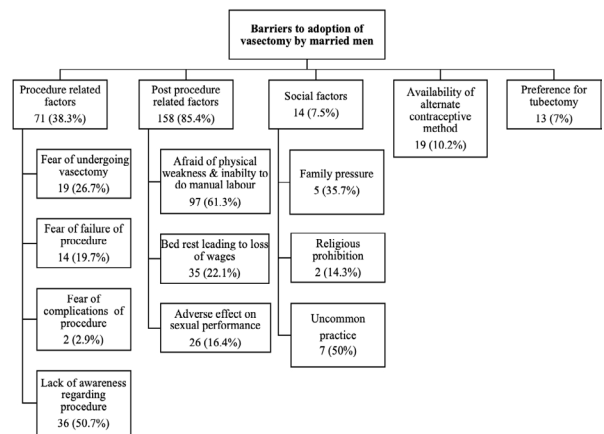
<sup>a</sup> \*Multiple responses recorded

However, nearly half (164; 54.7%) of the participants believed that female sterilization is preferable to male sterilization. Around 22.3% of the participants considered female sterilization to be easier and more commonly practiced. The willingness to recommend vasectomy to their friends, colleagues, or relatives was expressed by 128 (42.7%) participants.

When it comes to post-vasectomy considerations, the majority (204; 68%) of the participants disagreed with the notion that men need to use an additional contraceptive method after undergoing vasectomy. Similarly, 122 (40.7%) participants denied the belief that vasectomy carries long-term health risks (Table 3).

**Table 3.** Attitude and perception of participants towards vasectomy (n=300)

Indicator	Agree	Disagree	Don't know
1. Family planning is also a responsibility of males	285 (95)	3 (1)	12 (4)
2. Female sterilization is a better method than male sterilization	164 (54.7)	61 (20.3)	75 (25)
3. Willingness to undergo vasectomy in the future	39 (13)	185 (61.7)	76 (25.3)
4. Willingness to recommend vasectomy to friends/colleagues/family members	128 (42.7)	72 (24)	100 (33.3)
5. Vasectomy have a high success rate for contraception	116 (38.7)	31 (10.3)	153 (51)
6. Men need to use another contraceptive method after vasectomy	24 (8)	204 (68.0)	72 (24)
7. Vasectomy has long time health risks	70 (23.3)	122 (40.7)	108 (36)



**Fig 1.** Reasons for unwillingness to undergo vasectomy among married men (n=185)

**Barriers to adopting vasectomy**

When asked about their willingness to undergo vasectomy, 185 [61.7% (95% CI 56.2-67.5)] of the participants stated that they were not inclined to undergo vasectomy in the future. Figure 1 displays the barriers encountered by married men when considering a vasectomy. The responses were divided into five themes: Procedure-related factors, post-procedure-related factors, social factors, Availability of alternate contraceptive methods, and preference for tubectomy. A significant majority (97; 61.3%) expressed fear of experiencing

physical weakness and being unable to engage in manual labor following vasectomy. Additionally, 35 (22.1%) participants mentioned concerns about having to take bed rest, which could result in the loss of wages. Less than one-third (19; 26.7%) of participants expressed fear of undergoing the surgery itself, while 36 (50.7%) were not well-informed about the procedure and its potential complications. Approximately 10% of participants indicated a preference for alternative contraceptive methods in the future, and 7% mentioned that they would opt for female sterilization for their partners.

## Discussion

A cross-sectional descriptive study was conducted at a district hospital to assess the knowledge, attitude, and perceptions towards vasectomy among married men attending the hospital. Among the contraceptive users in our study, only one participant had undergone the procedure and this finding is consistent with the low prevalence rates reported in studies conducted by Madhukumar et al. (0.64%), Safi et al. (1.6%), Srivastava et al. (1.2%), as well as the NFHS-5 data, which reported a prevalence of vasectomy at 0.3%.<sup>1,6-9</sup>

Addressing this knowledge gap is crucial to improve the understanding and acceptance of vasectomy as a viable contraceptive option. While 86% of participants were familiar with vasectomy as contraception, only 80 participants knew of non-scalpel vasectomy, and merely 34 participants were aware of vasectomy. This finding suggests a gap in knowledge and awareness of non-scalpel vasectomy among the participants in our study. In comparison, the study by Garg et al. reported a much higher awareness rate of 97.4%.<sup>10</sup> This discrepancy may indicate variations in educational levels, information dissemination, or healthcare provider counseling across different settings. By addressing the lack of awareness, we can potentially increase the uptake of vasectomy as a reliable family planning option among married men.

Among the 300 participants, the majority of participants (256) lacked knowledge regarding the number of OPD visits needed for the non-scalpel vasectomy. We also found that 18 participants believed that a minimum of two children is required for undergoing vasectomy and 15 participants were uncertain about the minimum number of children required for vasectomy. These findings underscore the lack of clear understanding among the respondents regarding vasectomy.

The success of any family planning program greatly relies on the equal participation and responsibility of both male and female partners. Our study revealed that a majority of participants (285; 95%) acknowledged the importance of male involvement in family planning and recognized that it is a shared responsibility for the well-being of the family. This finding can be attributed to the increased education and awareness about family

planning within Indian communities, leading to a better understanding of their respective roles.

Our study found that nearly half of the participants (164; 54.7%) believed that female sterilization is preferable to male sterilization. Our findings were consistent with the study done by Madhukumar et al., where they also observed that 50% of males believed that tubectomy is better than vasectomy and the study by Sood et al. also found that almost 53% of men in their study believed that tubectomy was a simpler procedure therefore their partners should undergo sterilization instead.<sup>7,11</sup>

To assess their attitude towards vasectomy, participants were asked about their willingness to adopt vasectomy in the future and it was found that nearly two-thirds (185; 61.7%) of them were not willing to undergo vasectomy in the future. Similar findings were observed in studies conducted by Nesro et al. (76%), Ayeli et al. (80.4%), Safi et al. (89.3%), Sood et al. (89%).<sup>8,12</sup>

In our study, the high rejection rate was due to post-surgery-related myths and stigmas (85.4%) related to vasectomy. The majority of participants expressed fear regarding physical weakness and the inability to perform manual labor (61.3%) after the procedure. Similar concerns were noted by Madhukumar et al. (72%) and Shrivastava et al. (67.6%).<sup>6,7</sup> Participants also expressed worries about the need for prolonged bed rest following the surgery (22.1%), which could result in wage loss. Our findings align with those of Shrivastava et al. (38.2%) in a separate study.<sup>6</sup> Additionally, a common myth associated with vasectomy was a perceived loss of libido after the procedure, as observed in studies conducted by Shrivastava et al. (78.8%), Madhukumar et al. (76%), and Ayele et al. (25.4%).<sup>6-8</sup> We also found that 16.4% of participants were concerned about potential adverse effects on sexual performance. These findings highlight the importance of addressing and debunking these misconceptions to promote informed decision-making regarding vasectomy. The unwillingness to undergo vasectomy was also because of a lack of awareness regarding the procedure (50.7%) and which is in alignment with studies done by Srivastava et al. (70%), and Ayele et al. (74%).<sup>6,8</sup> Participants also reported fear of undergoing surgery (26.7%) in our study. Ayele et al. also found that 34% of men were scared of the surgery in North West Ethiopia.<sup>7</sup> The fear of failure of the procedure was also observed in 19% of participants in our study. Sood et al. also found that 52% of the men had fear of failure of vasectomy as it brings a bad name to wives in Punjab.<sup>11</sup> Fear of complications (3%) of the procedure after the surgery was another factor observed in our study which was coherent with studies done by Ayele et al. (35.7%), Desmennu et al. (26%) and Nesro et al. (16%).<sup>8,12,13</sup> These findings indicate the importance of addressing fears and providing adequate information to alleviate concerns and promote informed decision-making regarding the procedure.

Religious prohibitions were also a concerned factor in willingness for vasectomy in our study. Approximately 14% of the participants reported that their religious beliefs forbid vasectomy, which aligns with findings from studies conducted in Punjab (70.5%) and North West Ethiopia (34.7%). Social stigma and family pressure (35.7%) were found to be deciding factors to undergo vasectomy in our study.<sup>8,11</sup> Almost 75% of the respondents reported that the vasectomy procedure may cause community mistreatment according to a study done by Chinnaiyan et al.<sup>14</sup> These consistent observations highlight the need to consider and address religious and social perspectives when discussing and promoting vasectomy as a contraceptive option.

When asked about their intention to recommend vasectomy to others, 128 participants (42.7%) expressed their willingness to recommend the procedure and share their knowledge about it with friends, colleagues, and relatives. However, despite the positive attitude towards vasectomy, a significant portion of participants held reservations regarding certain aspects. While 68% (204) disagreed with the need for another contraceptive method post-vasectomy, only 38.7% (116) agreed that vasectomy has a high success rate. Additionally, 40.7% (122) believed that there might be some long-term health risks associated with vasectomy. These findings align with the study conducted by Safi et al., where 42.2% of participants expressed concerns about the health risks associated with non-scalpel vasectomy.<sup>9</sup> These findings suggest the need to address these misconceptions regarding vasectomy with counseling services.

### Study limitations

The present study had limitations in terms of generalizability, as the findings are based on the opinions of participants who exhibited better health-seeking behavior by seeking medical care at the hospital.

### Conclusion

The prevalence of vasectomy remains extremely low in various regions and states of India due to the presence of misconceptions, myths, lack of knowledge, and social stigmas surrounding the procedure. To boost the family planning program and increase acceptance of vasectomy, it is crucial to provide accurate information and education to the population through healthcare professionals and various media platforms. Efforts should be made to normalize the concept of vasectomy and reduce stigmas associated with it among the general population as well as healthcare professionals themselves. The government can play a vital role by initiating and promoting awareness programs to enhance knowledge and understanding about vasectomy among the population.

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#### Author contributions

Conceptualization, R.D.P., M.M.D., P.M.P. and P.S.; Methodology, P.S.; Software, R.D.P. and P.S.; Validation, R.D.P., M.M.D., P.M.P. and P.S.; Formal Analysis, R.D.P., M.M.D., P.M.P. and P.S.; Data Curation, R.D.P., M.M.D., P.M.P. and P.S.; Writing – Original Draft Preparation, R.D.P., M.M.D., P.M.P. and P.S.; Writing – Review & Editing, P.S.; Visualization, R.D.P., M.M.D., P.M.P. and P.S.; Supervision, P.S.; Project Administration, P.S.

#### Conflicts of interest

All authors declare that they have no conflicts of interest.

#### Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

#### Ethics approval

Permission was obtained from the Institutional Ethics Committee (DMHS/IEC/2016/214/1237) before commencing the study and written informed consent was obtained from every participant prior to their recruitment into the study. To ensure confidentiality, the identities of the respondents have been kept anonymous. Following the interviews, participants received counseling and comprehensive health education on vasectomy, including its benefits.

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