Prevalence and correlates of sexual health disorders among adult men in a rural area of North India: An observational study

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ABSTRACT

Background and Objectives: Sexual health disorders are an important but less researched public health issue in India. We aimed to estimate the prevalence of sexual health disorders and their associated factors among adult men in a rural community of Haryana, India. **Materials and Methods:** A community-based cross-sectional study was conducted among adult men aged 18–60 years using a multistage stratified random sampling. Information pertaining to sociodemographic characteristics, lifestyle and sexual practices, and self-reported sexual problems were collected. Sexual health disorders were defined based on International Statistical Classification of Diseases-10 classification of mental and behavioral disorders. Step-wise logistic regression was carried out to identify factors independently associated with sexual disorders. **Results:** At least one sexual health disorder was reported by 81% of the men. The most commonly reported disorder was self-perceived defect in semen (64.4%), followed by loss of libido (21%), masturbation guilt (20.8%), erectile dysfunction (5%), and premature ejaculation (4.6%). Factors significantly associated with sexual health disorders among all men were being never married (odds ratio = 2.04; 95% confidence interval: 1.51, 2.77), smoking (1.57; 1.16, 2.14), cannabis use (4.20; 1.68, 10.48), diabetes (2.40; 1.22, 4.73), and hypertension (3.17; 1.12, 8.92). **Interpretation and Conclusions:** A high burden of sexual health disorders was identified among the rural men. Wider recognition of this issue is needed among the health-care providers and policymakers.

Keywords: India, prevalence, rural, sexual health disorders

Introduction

Sexual health is an indispensable dimension of good health. Poor sexual health, either psychological or pathological, can seriously affect the quality of life of adolescent and adult men.[1] It is also a poorly recognized public health problem in India and elsewhere.[1,2] In India, general practitioners, who are the first point of contact for health care, are trained inadequately to deal with common sexual health problems.[3] Furthermore, access to experts such as urologists, sexologists, and andrologists is available only to men living in urban areas, where there is a high concentration of tertiary care hospitals and specialists.[4] This health-care vacuum has led to a thriving business for quacks who take advantage of the ignorance and the fear of patients.[5-8] In

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India, the concepts of sexuality are woven into the very fabric of everyday life and the disorders of sex are often stigmatized and considered shameful, which prevent timely and appropriate treatment.[9] Traditional Indian Systems of Medicine (ISM), has a well-developed epistemology based on the teachings handed down from generation to generation. These concepts do not often agree with modern medicine, but they have a strong presence in the common man's understanding and have greatly influenced their lexicon. This gives rise to the concept of culture-bound syndromes, which are defined as a symptom cluster influenced by cultural factors and individual perceptions, rather than being a recognizable biochemical or physical alteration according to modern medical systems.[10] There is evidence that patients suffering from sex-related symptoms often prefer practitioners of ISM more than allopathic doctors.[11]

Many recent studies from India have reported on the prevalence of sexual health disorders among various study populations.[12,13] However, some studies conducted among adult men attending hospital clinics have reported a lower prevalence.[14,15] Apart from the estimation of burden, a few studies have also explored the risk factors associated with sexual health disorders. Among the lifestyle factors, smoking, tobacco chewing, alcohol dependence, and opioid dependence have been implicated.[16-18] Diabetes mellitus,[19] psychiatric disorders,[20-23] and coronary artery disease[24] were common comorbidities associated with different sexual health disorders. Erectile dysfunction (ED) has also been found to be related to poor marital and sexual satisfaction in a study done in Northern India.[25]

Despite the importance of this issue as outlined above, in India, there is very little data about the burden of sexual health disorders from community-based studies, unlike some Western countries where some data are available.[26,27] There is a lack of clear understanding of factors that influence the occurrence of sexual health disorders in the Indian context, especially substance abuse which has been shown to be significantly associated with sexual disorders.[16-18] In India, studies on sexual health disorders are largely limited to hospital settings.[15,28] Therefore, we planned this community-based study with the objective to estimate the prevalence of various sexual health disorders and their associated factors among adult men residing in a rural community of Haryana, India.

Materials and Methods

Study setting and study population

The study was conducted in the villages of the Ballabgarh block of Faridabad, Haryana, that form the catchment area for the Comprehensive Rural Health Services Project, Centre for Community Medicine, All India Institute of Medical Sciences (AIIMS), New Delhi.[29] Sociodemographic details and other health-related information of population residing in these villages is maintained in a computerized Health Management Information System (HMIS). The sampling frame for this community-based cross-sectional study included all adult men aged 18–60 years in the study area.

Sample size and sampling strategy

The minimum required sample size was calculated for an assumed prevalence of sexual health disorders of 53%,[6] a precision of 5%, a design effect of 2.25, and a nonresponse rate of 20%. The required sample size was calculated as 1120. The design effect was used to take into account the clustering effect of the complex multistage sampling strategy that we employed. In the first stage, we randomly selected three villages from a total of 28 villages. In the second stage, participants in the three selected villages were randomly selected from among the eligible population using a software-based random selection procedure using the HMIS database. The sampling frame included all adults in the eligible age group who were residing in the study area for the past 6 months. Those who were unable to respond to questions due to problems of comprehension or sickness and those unwilling to give consent were excluded from the study. The data collection period was June–July 2014.

Study instruments

The survey instrument was a pretested interview schedule, which included questions on sociodemographic characteristics, lifestyle and sexual practices, and self-reported sexual problems. The interview schedule was prepared by three authors (VS, AKS, and RSA) drawing from previous similar studies to meet the objectives of the study. A small focus group discussion with young adults of the study area was conducted to refine the interview schedule and answering options. The English version was translated to Hindi and back translated to check for consistency of meaning.

Data collection procedure

Qualified male social workers, who were aware of local customs but did not belong to the study villages carried out the data collection. These social workers were middle-aged married men who were trained to show empathy if the situation demanded and interviews were carried out in settings of privacy, so as to ensure valid responses. Data collection was supervised on a weekly basis by RSA. The participants were given sufficient time to come out with the problems they had and before the interview began they were assured of the confidentiality of their information. Data collection forms were stored under lock and key on daily basis by VS. Sufficient care was taken to ensure that the information gathered was not shared with anyone else.

Operational definitions
Current sexual health disorder
Symptoms/disorders present at the time of interview or within 6 months of the interview were considered to be current disorders.

Sexual health disorders (ED, premature ejaculation, Dhat syndrome, loss of libido, defects in semen, physical abnormalities of external genitalia, nocturnal emission, and others conditions) based on the International Statistical Classification of Diseases-10 classification of mental and behavioral disorders, diagnostic

criteria for research were the main outcome measures for this study.[30] [Box 1]. All symptoms and diseases were self-reported and no clinical examination was carried out. Data on the past sexual health disorders were not collected in this study.

Statistical analysis

Descriptive analysis was done and the results were presented as percentages with 95% confidence intervals (CI). Prevalences of various sexual health disorders were stratified according to age (18–30 years and >30 years) and marital status (ever married and never married). Bivariate analysis was done to delineate the factors associated with sexual health disorders. Step-wise logistic regression was carried out to identify factors that were independently associated with the outcomes. Those variables which had a $P < 0.25$ in the bivariate analysis were included in the multivariable regression. Associations were reported in terms of unadjusted and adjusted odds ratios and 95% CI. A $P < 0.05$ was considered to be statistically significant. All analyses were done in Stata 12 (Stata Corp, College Station, Texas, USA). Data analysis was done by RSA and AL.

Ethical issues

Ethical clearance was obtained from the Institute Ethics Committee, AIIMS, New Delhi (Reference letter number; IEC/NP-278/2012). All the participants were provided with a participant information sheet and written informed consent was obtained. Participants needing treatment were referred to the subdistrict hospital, Ballabgarh, for counseling and further management by qualified specialists.

Results

Sociodemographic characteristics

Of the 1120 randomly selected men, 894 took part in the study giving a nonresponse rate was 20.2%. The proportion of nonresponse was higher among those aged >30 years as compared to those aged 18–30 years (32.7% vs. 6.5%). The two main reasons for nonresponse were locked house/inability to contact even after two house visits (17%) and refusal to participate in the study (3%). In the final sample, 60% of the men were below 30 years of age, most (76.3%) were educated up to high school or above and about two-thirds of men were currently married [Table 1].

Lifestyle practices

Nearly one-third of the men were current smokers (31.5%) and 29.3% were current alcohol consumers. Among the comorbidities reported, diabetes was the most common (4.8%), followed by hypertension (2.3%) [Table 1].

Prevalence of self-reported sexual health disorders

About 81% of the men reported currently experiencing at least one sexual health disorder. Three or more sexual health disorders were present in 14%. About two-thirds reported to

Box 1: Operational definitions of sexual health disorders included in this study		
Disorder	**Corresponding Hindi words/ phrases used in interview schedule**	**Operational definition**
ED	*Ling me tanaw na aana*	Erection is insufficient to perform intercourse when intercourse is attempted. The dysfunction appears as Full erection occurs during the early stages of lovemaking but disappears or declines when intercourse is attempted (before ejaculation if it occurs) or Erection does occur but only at times when intercourse is not being considered or Partial erection, insufficient for intercourse, occurs, but not full erection or No penile tumescence occurs at all
PME	*Veerya pehle nikal jaana*	Inability to delay ejaculation sufficiently to enjoy lovemaking, manifest as either Occurrence of ejaculation before or very soon after vaginal entry (before or within 15 s of vaginal entry) or Ejaculation in the absence of sufficient erection to make vaginal entry possible, and it should not be due to prolonged abstinence of sexual activity
Dhat Syndrome	*Dhaat ki samasyaa*	Passage of whitish urine, mostly considered by the patient as being semen and self-reported by the patient as being problematic and interfering with routine and daily activities
Loss of libido	*Sex karne ki ichcha na hona*	Lack or loss of sexual desire, manifest by diminution of seeking out sexual cues; thinking about sex with associated feelings of desire or appetite; or sexual fantasies or lack of interest in initiating sexual activity either with partner or as solitary masturbation at a frequency reduced from previous levels
Defects in semen	*Veerya me dosh*	Self-perceived defect in semen that may or may not hinder sexual intercourse
Physical abnormalities of genitalia	*Ling ke aakar me dosh*	Self-perceived defect in genitalia (penis, scrotum) that may or may not hinder sexual intercourse
Nocturnal emission	*Swapnadosh (night fall)*	Involuntary ejaculation occurring in the middle of sleep (day or night), self-reported by the patient as being problematic and interfering with routine and daily activities
Any other self-reported symptom/disorder	*Koi aur samasya*	A symptom or disorder reported by the participant as being related to his sexual health and interfering with his daily routine and/or for which he has sought treatment

ED: Erectile dysfunction; PME: Premature ejaculation

Table 1: Characteristics of the study participants	
Sociodemographic characteristics of the study participants	
Variable	***n* (%)**
Age (years)	
18-20	132 (14.8)
21-30	384 (43.0)
31-40	240 (26.8)
41-60	138 (15.4)
Education	
High school and above	681 (76.3)
Less than high school	212 (23.7)
Missing	1
Family type	
Nuclear family	381 (42.6)
Extended family	513 (57.4)
Marital status	
Currently married	596 (66.7)
Unmarried	289 (32.3)
Divorced/widower	9 (1.0)
Duration of marriage (among currently married men, *n*=596)	
≥10 years	338 (57.1)
<10 years	254 (42.9)
No answer	4
Wife's age (among currently married men, *n*=596)	
<30	365 (62.9)
≥30	215 (37.1)
Missing	16
Wife's education (among currently married men, *n*=596)	
Less than high school	360 (62.0)
High school and above	220 (38.0)
Missing	16
Number of children (among ever-married men, *n*=605)	
No children yet	57 (9.4)
≥1 children	548 (90.6)
Lifestyle habits of study participants	
Current alcohol use	262 (29.3)
Duration of alcohol use (years)	
≥10	51 (19.8)
<10	206 (80.2)
Information not available	5
Frequency of alcohol use	
Daily	27 (10.6)
Less than daily	227 (89.4)
Information not available	8
Current smoker	282 (31.5)
Duration of smoking (years)	
<10	197 (70.9)
≥10	81 (29.1)
Information not available	4
Frequency of smoking	
Daily	245 (94.6)
Less than daily	14 (5.4)
Information not available	23
Other substance abuse	
Cannabis	32 (3.6)
Chew tobacco	12 (1.3)
Snoring (self and family reported)	175 (19.6)
	Contd...

Table 1: Contd...	
Lifestyle habits of study participants	
Variable	***n* (%)**
Chronic illness	
Diabetes	43 (4.8)
Hypertension and other cardiac disease	23 (2.6)
Tuberculosis	4 (0.4)
Urinary problems	3 (0.3)
Others	22 (2.2)

have a self-perceived defect in semen. Other commonly reported disorders were loss of libido (21%) and masturbation guilt (21%). Other problems such as nocturnal emission (13.6%), inability to retract foreskin (5.1%), ED (5.0%), Dhat syndrome (4.8%), and premature ejaculation (4.6%) were less commonly reported. The prevalences of loss of libido (29.6% vs. 3.1%) and ED (6.8% vs. 1.4) were significantly higher in the ever-married group, whereas the prevalences of nocturnal emission (30.4% vs. 5.6%) and inability to retract foreskin (12.1% vs. 1.8%) were significantly higher in the never married group. Presence of at least one sexual health problem was reported by 78.8% of ever-married men, whereas it was 86.5% in never-married men and the difference was statistically significant ($P < 0.05$) [Table 2].

Stratification of the prevalence of sexual health disorders by age showed that loss of libido (37.0% vs. 9.3%), ED (7.6% vs. 1.9%), and premature ejaculation (6.3% vs. 3.3%) were higher among those aged >30 years, whereas masturbation guilt (26.4% vs. 13.2%), nocturnal emission (19.0% vs. 6.3%), and inability to retract foreskin (7.6% vs. 1.9%) were more common among those aged 18–30 years [Table 2].

Factors associated with sexual health disorders

Bivariate analysis revealed that a number of factors were associated with the increased odds of having a sexual health disorder. Multivariable logistic regression for all men showed that being never married, current smoking, cannabis use, diabetes, and hypertension were associated with the presence of a sexual health disorder [Table 3]. However, it was seen from the bivariate analysis that ever-married men were more likely to report ED and PME, whereas never-married men were more likely to report other sexual health disorders. Since the type of disorder varied according to the marital status, which was also a function of age, we conducted separate logistic regressions for ever- and never-married men. Among ever-married men, factors significantly associated with having a sexual health disorder were age ≥30 years, current smoking, cannabis use, diabetes, and hypertension. Among never-married men, current alcohol use and snoring were associated with the presence of a sexual health disorder [Table 3].

Discussion

This community-based study conducted among a random sample of men aged 18–60 years in rural Haryana found that

Table 2: Prevalence of sexual health disorders (overall and stratified by marital status and age)								
Sexual health disorder	Overall prevalence (*n*=894)		Prevalence stratified by marital status			Prevalence stratified by age		
	n	Percentage (95% CI)	Ever married (*n*=605)	Never married (*n*=289)	*P*	Age 18-30 years (*n*=516)	Age >30 years (*n*=378)	*P*
Self-perceived defect in semen	576	64.4 (61.2-67.5)	379 (62.6)	197 (68.2)	0.10	326 (63.2)	250 (66.1)	0.36
Loss of libido	188	21.0 (18.5-23.8)	179 (29.6)	9 (3.1)	<0.001	48 (9.3)	140 (37.0)	<0.001
Masturbation guilt	186	20.8 (18.3-23.6)	97 (16.0)	89 (30.8)	0.20	136 (26.4)	50 (13.2)	<0.001
Nocturnal emission	122	13.6 (11.6-16.1)	34 (5.6)	88 (30.4)	<0.001	98 (19.0)	24 (6.3)	<0.001
Inability to retract foreskin	46	5.1 (3.9-6.8)	11 (1.8)	35 (12.1)	<0.001	39 (7.6)	7 (1.9)	<0.001
ED	45	5.0 (3.8-6.7)	41 (6.8)	4 (1.4)	<0.001	14 (2.7)	31 (8.2)	<0.001
Dhat syndrome	43	4.8 (3.6-6.4)	26 (4.3)	17 (5.9)	0.18	25 (4.8)	18 (14.8)	0.95
PME	41	4.6 (3.4-6.2)	32 (5.3)	9 (3.1)	0.29	17 (3.3)	24 (6.3)	0.03
Self-perceived deformity in penis	30	3.4 (2.4-4.8)	18 (3.0)	12 (4.2)	0.32	17 (3.3)	13 (3.4)	0.91
Self-perceived small penis size	12	1.3 (0.8-2.3)	8 (1.3)	4 (1.4)	0.90	6 (1.2)	6 (1.6)	0.58
At least one self-reported sexual health disorder	727	81.3 (78.6-83.7)	477 (78.8)	250 (86.5)	0.006	409 (79.3)	318 (84.1)	0.07

CI: Confidence interval; ED: Erectile dysfunction; PME: Premature ejaculation

Table 3: Factors independently associated with sexual health disorders stratified by marital status - step-wise logistic regression		
	Adjusted OR (95% CI)	*P*
All men		
Marital status, never married	2.04 (1.51-2.77)	<0.001
Current smoker	1.57 (1.16-2.14)	0.003
Cannabis use	4.20 (1.68-10.48)	0.002
Diabetes mellitus	2.40 (1.22-4.73)	0.01
Hypertension	3.17 (1.12-8.92)	0.005
Ever-married men		
Age of participant, ≥30 years	1.47 (1.04-2.08)	0.02
Current smoker	1.42 (1.01-2.01)	0.04
Cannabis use	3.59 (1.41-9.13)	0.007
Diabetes mellitus	2.13 (1.04-4.38)	0.03
Hypertension	2.66 (0.93-7.61)	0.06
Never-married men		
Current alcohol use	2.35 (1.10-5.02)	0.02
Snoring	6.47 (0.97-6.47)	0.05

OR: Odds ratio; CI: Confidence interval

there is a huge burden of sexual health disorders among the rural men in this part of the country. The burden of sexual disorders was higher among never-married men as compared to the ever-married men.

Prevalence of sexual health disorders – comparison with Indian studies

In a community-based study done in Mumbai, PME (16.1%) was the most common self-reported sexual health problems.[7] The prevalence of PME in their study was almost three times that reported in our study. This difference was probably due to the difference in the sociodemographic characteristics of the participants, who were all married men aged 21–40 years with a lower mean educational status. On the other hand, recent hospital-based study from Southern India has reported the prevalences of ED and PME to be 48% and 43%, respectively.[12] However, in another study, the prevalences of PME and ED were found to be 18% and 17%, respectively.[15] Hospital-based studies tend to overestimate the burden of a particular sexual disorder such as ED or PME because their study population consists of a self-selected group that seeks care for their perceived sexual health problems. Furthermore, these patients tend to seek care for those conditions that are severe, disabling, and affect their day-to-day life. Therefore, estimating the prevalence of sexual health disorders from hospital-based studies would lead to spuriously high results.

Prevalence of sexual health disorders – comparison with global studies

Since there is a paucity of community-based studies in India, we compared our results with the community-based studies done outside India. These studies have reported a higher prevalence for individual disorders such as ED and PME when compared to the current study.[27,31] A higher reported prevalence in these studies was probably due to their study population being older than that of our study.

Correlates of sexual health disorders

It has been very well documented that diabetes, hypertension, and lifestyle practices such as smoking and alcohol consumption are associated with various sexual health problems.[19,31,32] Similarly, we also found that sexual health problems were significantly associated with the presence of diabetes, hypertension, or any chronic illness. It was also seen that current smokers and cannabis consumers were more likely to report sexual health problems than those without such habits.

Multifactorial etiology of sexual health disorders

Apart from medical causes and addictions, sexual health disorders are frequently associated with false beliefs and misconceptions. Because of the social inhibition and taboos associated with sex and its discussion, doubts related to sexual health are not frequently addressed by peers or friends, who themselves are not well informed on these matters, and therefore, the

misconceptions just linger on and spread through the social network.[12] Even when the decision is taken to seek care beyond the friend circle, it is frequently sought from local unqualified quacks because they are easily accessibility.[7,12] Sometimes, even physicians are not adequately trained to manage sexual health disorders.[3] This adds to the worsening of the problems by delaying diagnosis of genuine cases who require expert care, propagating misconceptions, and affecting the overall quality of life, which then transforms into a vicious cycle of poor psychological health in turn affecting sexual health.

It is clear from the above-mentioned points that most sexual disorders have a multifactorial etiology including medical causes, addictions, lack of awareness, social stigma, and poor health seeking behavior. Hence, a multipronged approach is required to address the burden of sexual health disorders in the community.

Strengths and limitations

To the best of our knowledge, this is among one of the very few community-based studies that have exclusively explored the prevalence of sexual health disorders among men in North India. This study has explored the sexual health problems of men who were sexually naïve, which have not been adequately reported hitherto.

However, there are a number of limitations that have to be considered. First, a number of factors such as low testosterone level, higher body mass index, psychiatric disorders, prostate disorders, and dyslipidemia have been documented as risk factors for sexual disorders, but we could not explore these in this study due to scope limitations. Second, due to the differential and higher nonresponse rate (32.7%) among participants aged more than 30 years, the final age composition of the participants was not representative of the source population, which might affect the estimate of the overall prevalence. Third, another cause for the underestimation of the true burden may be the taboos surrounding sex and sexual health in rural communities of India, leading to a social desirability bias. A confidential polling booth method, which has been found to have greater utility in eliciting unbiased results in such sensitive issues, would have been useful. Fourth, we were not able to cover the entire spectrum of sexual health disorders in the current study, for example, conditions such as orgasmic dysfunction, sexual aversion, and excessive sexual drive have not been assessed. Fifth, only self-reported information was collected and no clinical examination was performed due to practical and logistic reasons, and therefore, it was not possible to differentiate between pathological and psychological ED.

Future directions of the study

It is clear from the discussion that a major proportion of sexual health disorders reported by these men have a psychological etiology. This strengthens the argument in favor of integrating the care of sexual health disorders under the ambit of the mental health program in India. It is well know that the mental health program, in India, is plagued by a shortage of trained psychiatrists even in urban areas, and therefore, primary care physicians, ISM practitioners, and paramedical staffs such as clinical psychologists could be trained for identifying and treating common sexual health disorders with a system of referral reserved for complicated cases. There is a great need to educate the population from a relatively young age about sexuality and reproductive health, which is currently lacking in India. A number of avenues are available to promote sexual health education but integrating this into the school curriculum may be an easy and effective public health approach. Although only men were included in the study, women are also equally likely to suffer from sexual health issues and future studies should focus on them. The presence of such a high burden of sexual health problems could be a cause of mental stress, marital discord, and poor quality of life that needs exploration in the future studies.

Conclusions

There was a high burden of sexual health disorders among adult men in this rural community of Haryana. Wider recognition of this issue is needed among health-care providers and policymakers.

Recommendations

Training of primary health-care providers, general physicians, and family physicians on the early recognition and proper treatment and/ or referral of patients with sexual complaints would go a long way in reducing the unnecessary burden of poor health due to sexual health disorders. Family and primary care physicians have a pivotal role in recognizing sexual health problems during consultation for other conditions in an opportunistic manner. Sexual health problems, unlike other disease conditions, carry a lot of taboo and social inhibition-related factors that prevent their effective management. Hence, the findings of this study are very relevant in context with family medicine or primary care practice in India.

Conflicts of interest

There are no conflicts of interest.

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