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Predictors of Sexual Bother in a Population of Male North American Medical Students

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ABSTRACT

Introduction. The prevalence and associations of sexual bother in male medical students has not been extensively studied.

Aims. The aim of this study is to analyze predictors of sexual bother in a survey of male North American medical students.

Methods. Students enrolled in allopathic and osteopathic medical schools in North America between February 2008 and July 2008 were invited to participate in an internet-based survey of sexuality and sexual function.

Main Outcome Measures. The principle outcome measure was a single-item question inquiring about global satisfaction with sexual function. The survey also consisted of a questionnaire that included ethnodemographic factors, student status, sexual history, and a validated scale for the assessment of depression. Respondents completed the International Index of Erectile Function, the premature ejaculation diagnostic tool, and the Self-Esteem and Relationship Quality survey (SEAR). Descriptive statistics, analysis of variance, and multivariable logistic regression were utilized to analyze responses.

Results. There were 480 male subjects (mean age 26.3 years) with data sufficient for analysis. Forty-three (9%) reported sexual bother. Sexual bother was significantly more common in men with erectile dysfunction (ED), high risk of premature ejaculation (HRPE), depressive symptoms, and lower sexual frequency. However, after multivariate analysis including SEAR scores, ED, and HRPE were no longer independently predictive of sexual bother. Higher scores for all domains of the SEAR were associated with lower odds of sexual bother.

Conclusions. ED and HRPE are associated with sexual bother in this young and presumably healthy population. However, after controlling for relationship factors neither ED nor HRPE independently predicted sexual bother. It is plausible to hypothesize that sexual dysfunction from organic causes is rare in this population and is seldom encountered outside of relationship perturbations. Attention to relationship and psychological factors is likely of key importance in addressing sexual concerns in this population. **Smith JF, Breyer BN, and Shindel AW. Predictors of sexual bother in a population of male North American medical students. J Sex Med 2011;8:3363–3369.**

Key Words. Medical Student; Sexual Bother; ED; PE; SEAR; Global Satisfaction with Sexual Function

Introduction

Sexual dysfunction may pose a substantial impediment to quality of life and has been associated with medical and psychosocial comorbidities in men and women [1–3]. While sexual dysfunction is oftentimes a source of personal concern, it is increasingly apparent that "sexual dysfunction" may not always occur in the setting of subjective bother, particularly in women [1,3,4]. The absence of bother in the setting of dysfunction may be secondary to a lack of interest in sexuality in general, adaptation in sexual practices/expectations to compensate for perceived or real sexual limitations, or other factors [1,3,4]. Regardless of rationale, treatment of sexual concerns should occur only in the setting of bother and when there is a desire for improvement of the sexual situation [5].

The association between sexual bother and sexual dysfunction lessens with aging in women but not in men [1]. One might extrapolate from this that sexual dysfunction is more often disruptive of sexual enjoyment (i.e., a source of bother) in men compared with women. This interesting and complex relationship has influenced the methodology of studies on female sexuality [3]. There has been relatively less investigation on the relationship between sexual dysfunction and bother in men, particularly young men. Indeed, it is noteworthy that the International Index of Erectile Function (IIEF), the most widely used instrument for the quantification of male sexual function, does not directly assess subjective bother relating to erectile function [6]. As this instrument was developed primarily for use in clinical trials of treatments for erectile dysfunction (ED), personal bother relating to the condition was inferred by subject participation in a trial of therapy. Subsequent utilizations of the IIEF in research have not always occurred in the setting of concomitant acquisition of information on participant sexual bother. This represents a potential limitation of this instrument for use outside of the clinical trial setting, although the widespread use and simplicity of the IIEF do make it a desirable and useful tool for other sexuality research in men.

Our group recently completed an analysis of sexuality and sexual practices in medical students. In this subset analysis, we investigate the relationship between score on validated instruments for the assessment of ED and premature ejaculation (PE) and subjective sexual bother in these young male subjects. We hypothesized that lower scores on these validated instruments would be associated with increased odds of sexual bother. However, we also hypothesized that other health and relationship variables might explain subjective sexual bother related to ED and PE.

Methods

Medical students in North America were invited to participate in an internet-based survey. Invitations were extended via postings on the American Medical Student Association (AMSA) listserves, the Student-Doctor Network, and a news story posted on Medscape.com (http://www.medscape.com/viewarticle/574229). The survey was posted at QuestionPro.com (Survey Analytics, Seattle, WA, USA) and was available from February 22, 2008 until July 31, 2008. Approval for this study was granted by the Committee for Human Research at the University of California, San Francisco. Implied consent was assumed by subject participation in, and completion of, the survey instrument.

Main Outcome Measure

The primary outcome measure was a single-item question: "Which of the following statements best summarizes your feelings about your sexual function at this time?" Response options included the following: (i) "I am satisfied with my sexual function and would not change anything"; (ii) "I am mostly satisfied with my sexual function but there are things I would like to change"; (iii) "I am dissatisfied with my sexual function but I don't want to change anything at this time"; (iv) "I am dissatisfied with my sexual function and there are things I would like to change"; (v) "I have a sexual problem or dysfunction and would like to do something about it"; and (vi) "Sexual function and dysfunction are not issues for me." Subjects who selected response "iv" or "v" were considered to have sexual bother on subsequent analyses. Subjects who had not engaged in sexual intercourse and those that did not provide complete data were not included in subsequent analyses.

Survey

The survey also queried participant age, ethnicity, relationship status, paternity, medical school location, year in medical school, and several other demographic characteristics. To assess psychological morbidity in the study population, subjects completed the Center for Epidemiological Studies Depression Scale (CES-D), a 20-item instrument designed to assess presence and severity of depressive symptoms. A score of 16 or greater on the CES-D was taken as evidence of significant depressive symptoms [7].

Sexuality Surveys

Participants reported their sexual orientation, number of lifetime and recent (last 6 months) sexual partners, and sexual frequency per month. Male subjects completed the IIEF, a 15-item validated instrument for the assessment of five domains of male sexuality (desire, erectile function, intercourse satisfaction, orgasmic function, and overall satisfaction) [6]. The erectile function domain of the IIEF (IIEF-EF) is derived from six questions of the IIEF; validated cutoff scores have been utilized to classify ED of differing severity based on IIEF-EF score ($\geq$26 = no ED, 22–25 = mild ED, 17–21 = mild-moderate ED, 11–16 = moderate ED, $\leq$10 = severe ED) [8].

Men also completed the Premature Ejaculation Diagnostic Tool (PEDT), a 5-item validated instrument for the assessment of PE. A score of 9 or 10 on the PEDT indicates high risk for PE (HRPE) and a score of 11 or greater indicates clinically significant PE [9,10]. For purposes of this analysis, we considered all men with PEDT of nine or greater as HRPE. Men who were in sexual relationships were asked to complete the Self-Esteem and Relationship Quality (SEAR) survey, a 14-item validated instrument for the assessment of interpersonal factors related to sexuality, specifically sexual relationship and sexual confidence. Of note, the sexual confidence domain is further subdivided into self-esteem and overall relationship subdomains [11].

The IIEF, PEDT, and SEAR were initially developed and validated for use in subjects engaging in heterosexual coitus. Subtle modifications to instructions and wording were made so as to maximize their applicability to subjects whose primary means of sexual expression is not heterosexual coitus (i.e., homosexual subjects as well as heterosexual/bisexual subjects who engage in non-coital intercourse). These changes consisted primarily of (i) removing gender specific terms for the subject's partner and replacing them with gender neutral pronouns/nouns and (ii) expanding the scope of what constitutes "sexual intercourse" as "entering your partner's mouth, vagina, or anus" for the IIEF.

Statistical Methods

Men who had not had sex or did not provide a response for the primary outcome measure question, age, race, depression, sexual preference, marital status, relationship status, number of partners, and sexual frequency were excluded from this subset analysis. Descriptive statistics were used to characterize the study population. Analysis of variance (ANOVA) was used to assess differences for continuous variables, while chi-squared tests were used for categorical variables. Multivariate logistic regression models for the relationship between ED, HRPE, and sexual bother. Models were developed with a priori selected covariates including race, year in school, ethnicity, marital status, sexual orientation, presence of depressive symptoms, sexual frequency, and number of sexual partners in the last 6 months. Clinically significant differences in individual SEAR domain and subdomain scores were incorporated into the multivariate model separately so as to independently assess the relationship between sexual bother and each facet of interpersonal sexual relationship function assessed by SEAR. We defined a clinically significant difference in SEAR score as $^1/_2$ of a standard deviation change in the mean SEAR domain score [12]. Statistical significance was set at $P < 0.05$ and all tests were two-sided. STATA 11 (Statacorp, College Station, TX, USA) was used for all analyses.

Results

A total of 932 men completed the survey instrument. There were a total of 480 male respondents (mean age 26.3, range 18–51) who met criteria for inclusion as specified in the methods section. Responses are summarized in Table 1. Demographic data on the subjects that reported sexual bother relative to those that did not are presented in Table 2, stratified by ethnodemographic variables. Sexual bother was more frequent in subjects who had depressive symptoms, no or multiple partners in the past 6 months (relative to those with one partner only), lower sexual frequency, ED, and HRPE. There was a trend toward greater prevalence of sexual bother in the non-Caucasian respondents but this did not attain strict statistical significance ($P = 0.09$).

Multivariate analysis of the relationship between sexual bother and HRPE is presented in Table 3. HRPE was associated with a greater than threefold increase in the odds of sexual bother (odds ratio [OR] 3.3, 95% confidence interval [CI] 1.5–7.2; Table 3a), a relationship that became more pronounced (OR 5.7, 95% CI 2.1–15.2) after adjustment for ethnodemographic and sexuality variables (Table 3b). However, after inclusion of either the SEAR-sexual relationship, the SEAR-sexual confidence, or the SEAR self-esteem domains in the model, the relationship between sexual bother and HRPE was no longer significant (Table 3c–e). The significant relationship between HRPE and sexual bother was maintained (OR 4.6, 95% CI 1.5–13.4) in the multivariate model, which included SEAR-overall relationship (Table 3f). Clinically significant increases in SEAR scores for all domains were

Table 1 Response to subjective global assessment of sexual function (n = 480)

	n=	%
Satisfied, no desire for change	153	31.9%
Most satisfied, desire change	266	55.4%
Dissatisfied, no desire for change	8	1.7%
Dissatisfied, desire change	34	7.1%
Sexual dysfunction	9	1.9%
Sex is not an issue for me	10	2.1%

Table 2 Demographic, psychological, and educational characteristics and their relationship with sexual bother (N = 480)

	No sexual bother		Sexual bother		
	N	%	N	%	*P* value
Age (mean, standard deviation)	26.3	4.2	26.9	4.4	0.36
Race					
White	352	92.9	27	7.1	
Hispanic	26	83.9	5	16.1	
Black	7	87.5	1	12.5	
Asian	36	85.7	6	14.3	
Other	16	80.0	4	20.0	0.09
Year in school					
1	95	88.0	13	12.0	
2	123	93.2	9	6.8	
3	109	90.1	12	9.9	
4	82	93.2	6	6.8	
Research year	26	89.7	3	10.3	0.61
Have children	55	90.2	6	9.8	0.81
Significant depressive symptoms (CES-D ≥ 16)	107	79.3	28	20.7	<0.001
Sexual orientation					
Heterosexual	387	91.1	38	8.9	
Homosexual	39	90.7	4	9.3	
Bisexual	11	91.7	1	8.3	0.99
Married or in a domestic partnership	212	93.0	16	7.0	0.16
Partners in last 6 months					
0	4	80.0	1	20.0	
1	362	92.6	29	7.4	
2+	71	84.5	13	15.5	0.04
Sexual frequency last 30 days					
0–2	56	77.8	16	22.2	
3–5	92	86.0	15	14.0	
6–10	157	96.3	6	3.7	
11+	132	95.7	6	4.4	<0.001
Erectile dysfunction					
None	388	94.2	24	5.8	
Mild	30	83.3	6	16.7	
Moderate or severe	6	42.9	8	57.1	<0.001
High risk for premature ejaculation	57	81.4	13	18.6	0.002

CES-D = Center for Epidemiological Studies Depression Scale.

associated with lower odds of sexual bother in this multivariate analysis. There was no statistically significant association between sexual bother and both sexual frequency and number of sexual partners in this adjusted multivariate model ($P > 0.05$).

Multivariate analysis of the relationship between sexual bother and ED is presented in Table 4; because of the small proportion of subjects with ED, all ED severities were combined for this model. ED was associated with a sixfold increase in the odds of sexual bother (OR 6.3, 95% CI 3.0–13.2; Table 4a), a relationship that persisted (OR 4.6, 95% CI 1.8–11.6) after adjustment for ethnodemographic and sexuality variables (Table 4b). Similar to what was observed for HRPE, after inclusion of the SEAR-sexual relationship, the SEAR-sexual confidence, or the SEAR self-esteem domain in the model, the significant relationship between sexual bother and ED was lost (Table 4c–e). The significant relationship between ED and sexual bother was maintained (OR 3.1, 95% CI

Table 3 Multivariable analysis of relationship between HRPE and sexual bother

	Odds ratio	95% confidence interval		*P* value
A. HRPE (unadjusted)	3.3	1.5	7.2	0.003
B. HRPE (adjusted)*	5.7	2.1	15.2	0.001
C. HRPE-SEAR sex relationship*				
HRPE	2.5	0.8	7.7	0.12
SEAR-sex relationship (0.5 SD increase)	0.5	0.4	0.7	<0.001
D. HRPE-SEAR confidence*				
HRPE	2.1	0.6	7.1	0.254
SEAR-confidence (0.5 SD increase)	0.4	0.3	0.6	<0.001
E. HRPE-SEAR self-esteem*				
HRPE	2.3	0.7	7.3	0.16
SEAR self-esteem (0.5 SD increase)	0.5	0.3	0.7	<0.001
F. HRPE-SEAR relationship*				
HRPE	4.6	1.5	13.4	0.006
Sear-relationship (0.5 SD increase)	0.6	0.5	0.8	<0.001

Reference group for all analyses is men with no evidence for PE (PEDT < 9).
*Adjusted for age, race, year in school, sexual orientation, marital status, prior children, significant depressive symptoms, frequency of sexual activity, and number of sexual partners in last 6 months.
HRPE = high risk of premature ejaculation; SEAR = Self-Esteem and Relationship Quality survey; SD = standard deviation; PE = premature ejaculation; PEDT = premature ejaculation diagnostic tool.

Table 4 Multivariable analysis of relationship between ED and sexual bother

	Odds ratio	95% confidence interval		*P* value
A. ED (unadjusted)	6.3	3.0	13.2	<0.001
B. ED (adjusted)*	4.6	1.8	11.6	0.001
C. ED-SEAR sex relationship*				
ED (mild, moderate, or severe)	1.4	0.5	4.5	0.53
SEAR-sex relationship (0.5 SD increase)	0.5	0.4	0.6	<0.001
D. ED-SEAR confidence*				
ED (mild, moderate, or severe)	1.5	0.4	4.9	0.52
SEAR-confidence (0.5 SD increase)	0.4	0.3	0.5	<0.001
E. ED-SEAR self-esteem*				
ED (mild, moderate, or severe)	1.7	0.5	5.4	0.37
SEAR self-esteem (0.5 SD increase)	0.5	0.3	0.6	<0.001
F. ED-SEAR overall relationship*				
ED (mild, moderate, or severe)	3.1	1.1	8.8	0.03
Sear-confidence (0.5 SD increase)	0.6	0.5	0.8	<0.001

Reference group for all analyses is men with no evidence for ED (IIEF-EF $\geq$ 26).
*Adjusted for age, race, year in school, sexual orientation, marital status, prior children, significant depressive symptoms, frequency of sexual activity, and number of sexual partners in last 6 months.
ED = erectile dysfunction; SEAR = Self-Esteem and Relationship Quality survey; SD = standard deviation; IIEF-EF = International Index of Erectile Function-erectile function domain.

1.1–8.8) in the multivariate model, which included SEAR-overall relationship (Table 4f). Clinically significant improvements in SEAR scores for all domains were associated with lower odds of sexual bother in this multivariate analysis. We determined that number of sexual partners in the past 6 months was not significantly associated with sexual bother ($P > 0.05$). However, men with sexual frequency greater than six times per month were significantly less likely (OR 0.17, $P < 0.006$) to experience sexual bother compared with men having sex two times or less per month. Adjustment for SEAR self-confidence and SEAR self-esteem eliminated this association.

Discussion

In this population, both ED and HRPE were associated with greater odds of sexual bother on unadjusted analysis. However, these relationships were accounted for in large part by the interpersonal factors assessed by the SEAR. It is not novel to report that both ED and PE are associated with greater odds of sexual bother. However, the role of SEAR in mediating this effect implies that psychorelational factors play a very important role in subjective feelings about sexual function. This may be due to adaptation of sexual practices to accommodate sexual difficulties (more easily accomplished in the context of a supportive and stable relationship) or a greater incidence of sexual dysfunction stemming from psychological or relationship stress in this young and presumably healthy population. These findings are in line with other reports that have emphasized the importance of the sexual relationship in determining net sexual bother/satisfaction [13].

Premature ejaculation is a more subjective and difficult to define sexual concern relative to ED. For this reason, particular attention to psychosocial context and subjective bother are important in diagnosing this condition. PE (as determined by Diagnostic and Statistical Manual IV-TR criteria, the Premature Ejaculation Profile, and ejaculatory latency time less than 2 minutes) has previously been associated with lower mean SEAR scores in a community-based observational study of men in relationships [5,14]. To our knowledge, PEDT scores have not been previously associated with SEAR scores in the published literature but our findings are in agreement with those of Rowland et al. [14].

Data from the National Health and Social Life survey did not detect an association between "early ejaculation" and life stress [15]. However, early ejaculation in this study was assessed by response to a single-item question so it is unclear how many of these subjects had clinical PE. More recent data have indicated that men with PE are more likely to endorse bother, anxiety, and sexual dissatisfaction [16]. Furthermore, successful management of PE has been linked to substantial improvements in personal bother and interpersonal difficulty [17]. However, Jern et al. suggested that PE may play a limited (albeit significant) role in overall sexual bother, particularly in relationships of long duration [18]. Jern's findings are generally congruous with our own.

It is of particular interest that better scores on the SEAR-overall relationship subdomain were associated with lower odds of sexual bother in both models but did not eliminate the significant association between bother and ED/HRPE as did the other SEAR domains. This is likely due to the focus of this particular SEAR subdomain on non-sexual variables in the relationship, whereas all other SEAR domains are focused on sexual issues; ergo, sexual bother may factor only indirectly into the SEAR-overall relationship score. The clear impact of PE and ED on sexual relationships and particularly on male self-esteem and confidence is demonstrated by our data.

The data on respondents with more than one partner over the past 6 months are of particular

interest. The prevalence of sexual bother was lowest in the group that had one sexual partner over the preceding 6 months; bother was most prevalent in the population without a regular partner but individuals with more than one partner in that time frame had a rate of bother similar to the unpartnered men. We did not fully characterize the nature of sexual involvements within the preceding 6 months, but it is likely that the individuals with multiple partners were not in stable monogamous relationships and/or had recently changed relationships. It is tempting to speculate based on this finding and our data on the mediating effect of SEAR that the security of a stable sexual relationship largely ameliorates sexual bother. However, this hypothesis is strictly conjectural because of limitations of our dataset. In the multivariate models, number of recent sexual partners was not a statistically significant predictor of sexual bother.

Limitations of this dataset include a lack of subject interview data; in the absence of formalized evaluation and explanation of the survey instruments themselves, it is difficult to be certain how subjects may have interpreted or misinterpreted certain questions. Missing data points led to attrition of almost half of our nonvirgin male dataset from the final analysis; however, this did lead to a more complete dataset on the group of subjects analyzed. Our sample was drawn from a highly educated subject pool and is certainly not representative of the larger population; these associations may not hold true in nonmedical students. The proportion of students from minority ethnic groups was also relatively low. Ethnic minority status has been associated with significant differences in the prevalence of sexual bother and sexual dysfunction [15,19]. Our data suggest that this may be irrespective of educational status (itself a known risk factor for greater risk of ED) [15] as there was a trend toward greater sexual bother in non-Caucasians. However, because of the small number of subjects in this study we cannot definitively comment on this. Lastly, individuals who participate in an uncompensated internet-based sexuality survey may not be representative of the general population and may not provide data that are entirely valid [20].

Despite these shortcomings, our data are of value in its assessment of sexual bother and their association with numerous ethnodemographic and sexuality issues in men. It is suggested that the presence of sexual problems in this population may be more often related to interpersonal and psychosocial variables than sexual function/dysfunction.

Conclusions

Sexual bother in young professional students may be related to sexual dysfunction but this relationship is mediated primarily by psychorelational factors. Attention to situational and relationship factors in young men presenting with ED is mandatory. A holistic approach to the assessment of sexual function is important to optimize sexual well-being in this population.

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Statement of Authorship

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