

EPIDEMIOLOGY & RISK FACTORS

Comparison of Correlated Comorbidities in Male and Female Sexual Dysfunction: Findings From the Third National Survey of Sexual Attitudes and Lifestyles (Natsal-3)

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ABSTRACT

Background: Many of the same mechanisms involved in the sexual arousal-response system in men exist in women and can be affected by underlying general medical conditions.

Aim: To assess whether sexual function in men and women is correlated with similar comorbidities.

Methods: This study was a secondary analysis of the 3rd National Survey of Sexual Attitudes and Lifestyles (Natsal-3), a prospective stratified probability sample of British individuals 16 to 74 years old interviewed from 2010 to 2012. We assessed for an association between sexual function and the following comorbidities: heart attack, heart disease, hypertension, stroke, diabetes, chronic lung disease, depression, other mental health conditions, other neurologic conditions, obesity, menopause, incontinence, smoking status, and age.

Outcome: An association was found between multiple medical comorbidities and sexual dysfunction in women and in men.

Results: 6,711 women and 4,872 men responded to the survey, were in a relationship, and reported sexual activity in the past year. The average age of the women was 35.4 ± 14.1 and that of the men was 36.8 ± 15.6 . There was an association between sexual function and all variables assessed except for chronic lung disease, heart attack, and incontinence in women compared with stroke, other neurologic conditions, incontinence, and smoking status in men. Comorbidities associated with erectile dysfunction included depression, diabetes, and other heart disease, whereas comorbidities associated with difficulty with lubrication included depression and other heart disease. Menopause was predictive of sexual dysfunction. Male sexual function appeared to decline after 45.5 years of age.

Clinical Implications: Physicians should be aware of the correlation between medical comorbidities and sexual dysfunction in women and men and should ask patients about specific symptoms that might be associated with underlying medical conditions.

Strengths and Limitations: Use of a stratified probability sample compared with a convenience sample results in capturing of associations representative of the population. Inclusion of multiple comorbidities in the multivariate analysis allows us to understand the effects of several variables on sexual function. Although this study shows only an association, further research could determine whether there is a causal relation between comorbidities and sexual dysfunction in women.

Conclusion: Multiple medical comorbidities are associated with sexual dysfunction not only in men but also in women. **Polland A, Davis M, Zeymo A, et al. Comparison of Correlated Comorbidities in Male and Female Sexual Dysfunction: Findings From the Third National Survey of Sexual Attitudes and Lifestyles (Natsal-3).** *J Sex Med* 2018;XX:XXX–XXX.

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Key Words: Female Sexual Dysfunction; Erectile Dysfunction; Comorbidities; Natsal

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INTRODUCTION

Although erectile dysfunction (ED) is widely recognized to be correlated with multiple comorbidities, less research has been done on the association of comorbidities with female sexual dysfunction (FSD). The National Health and Social Life Survey

found sexual dysfunction to be more prevalent in women than in men (43% vs 31%).¹ Despite the high prevalence, the risk factors for FSD are less well understood than those for male sexual dysfunction.² ED is widely recognized to be correlated with multiple comorbidities. It is considered an early symptom or harbinger of cardiovascular disease owing to the common risk factors and pathophysiology mediated through endothelial dysfunction. In fact, according to the second Princeton Consensus Guidelines, all men with ED should be considered as cardiac (or vascular) patients until proven otherwise, even if they exhibit no cardiac or vascular symptoms.³ Although conditions known to affect male sexual function, such as heart disease, hypertension, diabetes, and depression, also have been described in association with FSD, this association is less well understood. Many of the same mechanisms involved in the arousal-response system in men exist in women and can be affected by underlying general medical conditions.

Current data have shown evidence of an association between sexual health in men and women and vascular risk factors, including hypertension, obesity, diabetes, and coronary heart disease.^{4,5} Smoking, which causes endothelial dysfunction, also has been found to be an independent risk factor for ED and FSD, with cumulative smoking exposure associated with higher risk.^{6,7} Monga et al⁸ found stroke to be associated with decreased libido in men and women, ED and ejaculatory dysfunction in men, and difficulties with lubrication and orgasm in women. Incontinence also has been found to be associated with sexual dysfunction in men and women.^{9,10} Chronic obstructive pulmonary disease (COPD) is associated with ED, and the degree of pulmonary function impairment has been correlated with severity of ED¹¹; however, virtually no evidence exists on FSD in women with COPD.¹² Psychosocial factors such as depression also have been shown to be significantly correlated with sexual function.^{13–15} Few studies have examined the interplay between these factors, especially for female sexual function. Furthermore, many prior studies have used convenience samples, which might not be representative of the overall population. The purpose of this study was to assess whether sexual function in men and women is correlated with similar comorbidities in a large population sample.

METHODS

This study was a secondary analysis of the 3rd National Survey of Sexual Attitudes and Lifestyles (Natsal-3), a prospective stratified probability sample of British individuals 16 to 74 years old interviewed from 2010 to 2012; sexual function was assessed using the validated Natsal-SF.^{16,17} The Natsal-SF is a 17-item measure, which provides an indication of an individual's level of sexual function, taking into account reported function problems, the relational context, and levels of satisfaction and distress. Natsal-3 is the 3rd of a series of population-based surveys exploring the associations between health and sexual lifestyle in Britain. Funding for the survey was provided by grants from the UK Medical

Research Council and the Wellcome Trust, with support from the Economic and Social Research Council and the Department of Health. Secondary analysis of the data was approved by our institution's institutional review board and did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. All analyses were performed using R programming with additional statistical packages.

All subjects (16–74 years old) who participated in the Natsal-3 survey were eligible for inclusion in this secondary analysis. Participants who reported not being sexually active within the past year were excluded. Individuals who were sexually active within the past year but not in a relationship were included but could not answer sexual function questions regarding partnership. Their missing answers were estimated in the original Natsal-3 dataset using modeling techniques. Those estimated values were used in this secondary analysis. Sexual function was analyzed as a continuous and a binary variable in which subjects were stratified by the presence or absence of low sexual function, defined as the lowest sex-specific quintile of Natsal-SF scores. ED was assessed in male subjects as a binary variable by asking specifically about “problems achieving/maintaining erections” lasting more than a month within the past year. Difficulty with lubrication was assessed in female subjects as a binary variable by asking specifically about “trouble lubricating” lasting more than a month within the past year. Subjects were stratified by sex and analyses of men and women were done separately for comparison. We assessed for a correlation between sexual function scores and age and body mass index (BMI) using the Pearson correlation. We assessed the effects of sexual orientation on sexual function scores through the use of subject response to questions regarding sexual attraction and sexual experiences. Subjects were asked specifically about the presence or absence of the following medical conditions: heart attack, heart disease, hypertension, stroke, diabetes, chronic lung disease, depression, other mental health conditions, other neurologic conditions, menopause, incontinence, and smoking. All conditions were self-reported as binary variables. Smoking was reported in multiple ways, as a categorical variable with the responses “never,” “ex-smoker,” or “current” and by number of cigarettes usually smoked per day. To compute smoking as a binary variable, for the multivariate analysis, current and ex-smokers were considered smokers for this analysis. We also assessed for an association between sexual function scores and those conditions using t-tests, analyses of variance, Cuzick test for trend, and χ^2 tests where appropriate. To assess the effect of medications separate from the effect of the conditions, we assessed for an association between sexual function and the use of medications for the following conditions: heart disease, hypertension, diabetes, depression, and other mental health conditions.

In the Natsal-3, women were asked specifically whether they had experienced menopause but not the age at which they had experienced menopause. A recursive partitioning and regression tree model was used to determine the age threshold at which there was a significant partitioning between participants who were

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