

Association of sexual problems with social, psychological, and physical problems in men and women: a cross sectional population survey

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Abstract

Study objective—To investigate the association of sexual problems with social, physical, and psychological problems.

Design—An anonymous postal questionnaire survey.

Setting—Four general practices in England.

Participants—789 men and 979 women responding to a questionnaire sent to a stratified random sample of the adult general population (n=4000).

Main results—Strong physical, social, and psychological associations were found with sexual problems. In men, erectile problems and premature ejaculation were associated with increasing age. Erectile problems were most strongly associated with prostate trouble, with an age adjusted odds ratio of 2.6 (95% confidence intervals 1.4, 4.7), but hypertension and diabetes were also associated. Premature ejaculation was predominantly associated with anxiety (age adjusted odds ratio 3.1 (95% confidence intervals 1.7, 5.6)). In women, the predominant association with arousal, orgasmic, and enjoyment problems was marital difficulties, all with odds ratios greater than five. All female sexual problems were associated with anxiety and depression. Vaginal dryness was found to increase with age, whereas dyspareunia decreased with age.

Conclusions—This study indicates that sexual problems cluster with self reported physical problems in men, and with psychological and social problems in women. This has potentially important consequences for the planning of treatment for sexual problems, and implies that effective therapy could have a broad impact on health in the adult population.

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association, particularly in men; other studies have suggested that the link may be more complicated than at first thought.⁴⁻⁵ No other areas of social life have been particularly indicated in clinical research as having strong associations with sexual problems.

A number of studies have looked at the relation between sexual problems and specific physical conditions. The most widely reported association is between male sexual problems and diabetes.⁶ Another commonly mentioned link is between sexual problems and hypertension, although it is unclear whether the association results from the high blood pressure itself, or from the antihypertensive therapy. Thiazides and β blockers in particular have been shown to have associations with impotence and decreased libido in men⁷⁻⁹; the relation between these drugs and female sexual problems is less clear. A number of studies have also looked at groups such as women with gynaecological cancers¹⁰ and people with ileostomies,¹¹ and the prevalence of difficulties in such groups is assumed to be higher than in the general population.

Associations between sexual problems and anxiety have been reported,^{12,13} although the cause and effect nature of this link is unknown. Relations between sexual problems and depression are also reported, but the influence of antidepressive drugs is unclear.¹⁴

Alcohol is often cited as a cause of sexual problems. However, all of the work carried out in this area has been with diagnosed alcoholics and people with alcoholic cirrhosis of the liver. Such people represent a very small proportion of the drinking population and no work has been carried out looking at the role of alcohol in the general population.

Our study sought to investigate the characteristics associated with sexual problems in a large general population sample.

Methods

A questionnaire was developed, piloted, and sent out to a random sample of 4000 people aged 18 to 75 years registered with four general practices in England, along with a letter from their general practitioner and a reply paid envelope. The general practices were diverse in terms of their geographical location and level of urbanisation. A reminder letter was sent out to the entire study population, but repeat questionnaires could not be sent out as the survey was anonymous and individual respondents were not identifiable.

Questions were asked regarding age, alcohol consumption, occupation, and marital status. A

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Sexual problems are common in the general population¹ and textbooks emphasise their association with other areas of people's lives, including social functioning, psychological status, and physical illness.² Most of the work that has described these associations has been carried out in limited sections of the population, notably clinic based samples.

The area of people's social life that is thought to have the most relevance to sexual problems is that of difficulties with marriage or long term relationships. Rust *et al*³ investigated this association and found there to be a strong

Table 1 Percentage (95% CI) of people reporting social and physical problems

Type of problem	Total completed responses	Percentage (95% CI)
Housing problem	1708	7 (6,8)
Work problem	1548	14 (12,16)
Problem with finances	1682	15 (14,17)
Problem with social life	1725	14 (12,15)
Marital difficulties	1622	8 (7,9)
Problem with children*	571	6 (4,7)
Problem with relationships with others*	519	10 (7,12)
Hypertension	1701	22 (20,24)
Cholesterol	1701	9 (8,10)
Diabetes	1701	3 (2,4)
Prostate problem*	755	11 (9,13)
Pre-menstrual tension*	946	35 (32,38)
Hysterectomy*	946	14 (12,16)
Abnormal cervical smear*	946	18 (15,20)

*Only completed if appropriate.

section was included regarding social problems using the Social Problems Questionnaire, a schedule previously validated for use in the general population.¹⁵ Problems with housing, work, finances, social life, marriage, children, and relationships with others were defined as present if a respondent gave a positive answer for one or more of the questions in the relevant section.

Respondents were asked to tick a checklist to indicate whether they currently had or had ever had a range of problems with physical health. These were: hypertension, diabetes, prostate trouble (men), pre-menstrual tension (women), a hysterectomy (women), an abnormal cervical smear (women) or any long term illness or disability. The answers were not validated against objective clinical data in this anonymous survey, and so represent self perceived problems.

The Hospital Anxiety and Depression Scale (HAD Scale)^{16,17} was used as a measure of psychological status. This is a well validated instrument for use in the general population, and has the advantage of not being confounded by the presence of physical ill health. The scores for anxiety and depression were calculated out of a maximum score of 21 for each part of the scale as recommended by the authors. The respondents were then divided into “tertiles” according to their score for each of the scales, by separating them at the 33rd and 67th percentiles. A score of 11 or more on either of the scales was considered indicative of the presence of anxiety or depression.¹⁸

Cross sectional associations were summarised by the prevalence odds ratio with 95% confidence intervals (CI) and multivariate analysis was carried out using the STATA statistical package.¹⁹ Because some of the symptoms were common and because no cause and effect relation has been assumed in this cross sectional survey, the odds ratio should not be

interpreted here as a direct estimate of the “relative risk”, but as a measure of association.

Results

DEMOGRAPHY

Forty four per cent of the study population replied to the survey. The median age of the respondents was 50 years (range 18 to 75 years). Thirty four per cent of men and 41% of women reported having a current sexual problem, the most common problems being erectile dysfunction in men and vaginal dryness in women. Table 1 shows the prevalence of self reported social and physical problems.

Half of the respondents (n=888) reported that they were currently receiving prescribed drugs, comprising 41% of men and 58% of women. Forty per cent of the women were either taking the contraceptive pill or receiving hormone replacement therapy, which accounts for the higher numbers of women on prescribed drugs. Twelve per cent of respondents reported that they were taking antihypertensive drugs, 17% of these were taking thiazides (BNF category 2.2.1), 41% β blockers (BNF category 2.4), 37% ACE inhibitors (BNF category 2.5), and 31% calcium channel blockers (BNF category 2.6.2).

From the HAD Scale, the median anxiety scores in men and women were 5 and 7 respectively, and the median depression scores were 3 for men and 4 for women. Anxiety was present in 13% of men and 24% of women, while 4% of men and 6% of women had depression.

CHARACTERISTICS ASSOCIATED WITH MALE SEXUAL PROBLEMS

Erectile problems

Erectile problems were associated with a variety of predominantly physical factors. The main association was with self reported prostate problems (table 2). When adjusted for age, a confounding variable in the association, the odds ratio for this association was 2.6 (95% CI 1.4, 4.7). Calculation of the aetiological fraction indicates that 14% of erectile dysfunction in the male community might be linked with prostate problems.

Erectile problems are associated with self reported hypertension, but this relation appeared to be limited to those taking antihypertensive drugs. Table 3 shows that all of the categories of antihypertensive drugs have associations with erectile problems, with ACE inhibitors having the strongest and only statistically significant odds ratio. In addition, the associations for any antihypertensive drug and for ACE inhibitors separately were consistent across each of the four practices, and the

Table 2 Odds ratios (95% CI) for associations between various self reported physical, social, and psychological factors and various sexual problems: men

Sexual problem	Age	Anxiety	Depression	Marital difficulties	Antihypertensive drugs	Hypertension	Prostate problems
Problem getting an erection (n=638)	2.1 (1.7,2.5)	1.3 (0.8,2.2)	2.3 (1.0,5.4)	0.7 (0.3,1.5)	4.5 (2.7,7.3)	2.6 (1.7,4.0)	4.5 (2.6,7.8)
Problem maintaining an erection (n=637)	2.2 (1.9,2.6)	1.3 (0.7,2.1)	1.9 (0.8,4.3)	0.8 (0.4,1.6)	3.7 (2.3,6.0)	2.3 (1.5,3.5)	5.1 (2.9,9.0)
Erectile problem (n=640)	2.0 (1.8,2.4)	1.2 (0.7,2.0)	1.9 (0.9,4.4)	0.7 (0.4,1.4)	3.7 (2.3,6.0)	2.5 (1.6,3.7)	5.2 (3.0,9.2)
Premature ejaculation (n=610)	1.3 (1.1,1.5)	2.5 (1.4,4.4)	1.9 (0.8,5.0)	1.9 (1.0,3.8)	1.5 (0.8,2.8)	1.4 (0.8,2.4)	1.2 (0.5,2.7)
Inhibited enjoyment (n=525)	1.2 (1.0,1.5)	1.6 (1.4,2.4)	5.1 (1.7,15.4)	1.6 (0.5,4.9)	1.9 (0.8,4.3)	1.9 (0.9,3.7)	1.4 (0.5,4.1)
Any of above (n=686)	1.5 (1.3,1.7)	1.4 (0.9,2.3)	2.6 (1.1,5.8)	1.0 (0.5,1.7)	2.4 (1.5,3.7)	1.9 (1.3,2.7)	3.6 (2.1,6.1)

Table 3 Age adjusted odds ratios (95% CI) for the association between erectile problems and antihypertensive therapy (n=626)

Type of antihypertensive therapy	Odds ratio (95% CI)
Any antihypertensive drug	1.8 (1.1,3.0)
Thiazide	2.0 (0.6,6.6)
β blocker	1.5 (0.7,3.4)
ACE inhibitor	2.1 (1.0,4.5)
Calcium channel blocker	1.5 (0.7,3.3)

association with thiazides was consistent across three of the four practices.

The relation between diabetes and erectile problems was also confounded by age, the resulting age adjusted odds ratio (95% CI) for the association between insulin dependent diabetes mellitus (IDDM) and erectile problems was 6.9 (1.1, 45.2). Although the odds ratio for this association is high, the proportion of men with IDDM in the population is small and only 1% of erectile dysfunction may be associated with IDDM. There was no association observed between non-insulin dependent diabetes mellitus and erectile problems.

Premature ejaculation

The main association with premature ejaculation was anxiety, adjusted for age as a confounder, the odds ratio (95% CI) was 3.1 (1.7, 5.6). This was related to the severity of the anxiety as measured by the HAD Scale, with a statistically significant trend across categories of HAD score (fig 1).

An association was observed between premature ejaculation and depression, but this was reduced after adjusting for confounding by age. There were also associations between premature ejaculation and various social problems, but anxiety was a confounding factor, and the result was non-significant after adjustment.

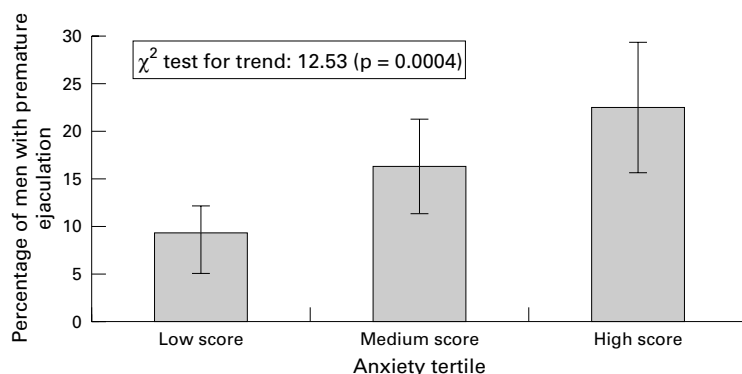


Figure 1 Percentage (95% CI) of men with premature ejaculation in each anxiety tertile.

Table 4 Odds ratios (95% CI) for associations between various self reported physical, social, and psychological factors and various sexual problems: women

Sexual problem	Age	Anxiety	Depression	Marital difficulties	Antihypertensive drugs	Hypertension	Hysterectomy
Arousal problem (n=615)	1.1 (0.9,1.3)	3.5 (2.3,5.5)	6.0 (3.0,11.9)	6.8 (3.8,12.4)	0.4 (0.1,1.2)	0.9 (0.5,1.6)	1.5 (0.8,2.8)
Orgasmic dysfunction (n=613)	1.1 (1.0,1.2)	2.0 (1.4,3.0)	4.3 (2.2,8.6)	5.1 (2.8,9.3)	0.3 (0.1,0.8)	0.6 (0.4,1.0)	1.3 (0.7,2.2)
Inhibited enjoyment (n=614)	1.2 (1.0,1.4)	2.3 (1.5,3.5)	2.9 (1.4,6.0)	5.9 (3.2,10.6)	0.4 (0.1,1.2)	0.8 (0.4,1.4)	2.0 (1.1,3.6)
Vaginal dryness (n=646)	1.2 (1.1,1.4)	1.8 (1.3,2.7)	2.3 (1.2,4.3)	1.2 (0.7,2.2)	1.3 (0.7,2.4)	1.5 (1.0,2.3)	1.3 (0.8,2.2)
Dyspareunia (n=650)	0.8 (0.7,0.9)	2.8 (1.8,4.3)	4.5 (2.3,8.7)	1.9 (1.0,3.5)	0.7 (0.3,1.6)	1.3 (0.8,2.2)	0.4 (0.2,0.9)
Any of above (n=696)	1.0 (0.9,1.2)	2.2 (1.5,3.1)	3.9 (1.9,7.7)	3.3 (1.9,5.7)	0.8 (0.4,1.5)	1.1 (0.7,1.6)	1.4 (0.9,2.2)

KEY POINTS

- There are strong physical, social, and psychological associations with sexual problems.
- Male sexual problems are most strongly associated with age and physical problems.
- Female sexual problems are most strongly associated with psychosocial problems, particularly marital difficulties.
- Associations with sexual problems have potentially important consequences for the planning of treatment
- Effective therapy for sexual problems could have a broad impact on health in the adult population.

Inhibited enjoyment

The predominant association with inhibited enjoyment in men was depression (table 2). Age was not a confounding factor in this association. When the depression score was categorised into tertiles, it was only the upper tertile of depression that had a raised prevalence of inhibited enjoyment. None of the other variables had significant associations with inhibited enjoyment in men.

CHARACTERISTICS ASSOCIATED WITH FEMALE SEXUAL PROBLEMS

Arousal problems

Problems with arousal in women were strongly related to self reported marital difficulties (table 4). This association was unaffected by adjusting for potential confounders, such as age and psychological status, and was statistically significant in each of the four practices. Depression and anxiety were also strongly related to arousal problems.

Orgasmic dysfunction

Problems with orgasm in women showed a very similar pattern of associations as that of arousal problems. The main link was with marital difficulties. This too was unaffected by adjusting for potential confounders and was found in all four practices. Depression and anxiety were also significantly related to orgasmic dysfunction (table 4).

Inhibited enjoyment

Once again, marital difficulties emerged as the strongest association for inhibited enjoyment in women, with anxiety and depression also significantly associated (table 4). The prevalence of inhibited enjoyment increased somewhat with advancing age.

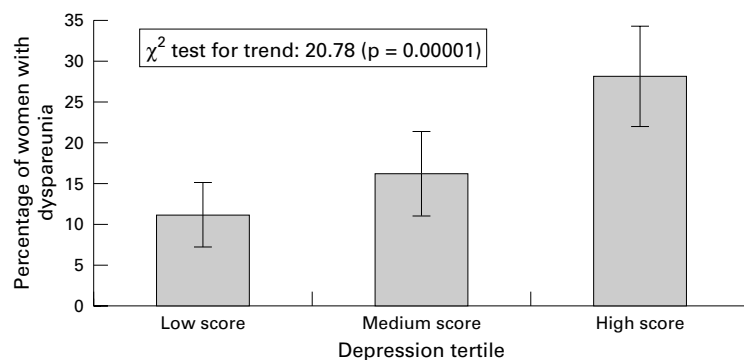


Figure 2 Percentage (95% CI) of women with dyspareunia in each depression tertile.

Vaginal dryness

The strongest associations with vaginal dryness were age and psychological status (table 4). Unlike many of the other female sexual problems, vaginal dryness was not significantly associated with marital difficulties.

Dyspareunia

The strongest association with dyspareunia was psychological status, in particular the presence of depression (table 4). The proportion of women with dyspareunia increased with increasing depression score (fig 2). The prevalence of dyspareunia fell with advancing age. There was also a significant association with marital difficulties, although this was not as pronounced as for some of the other female problems.

Discussion

This is the first study to look at a wide range of physical, social, and psychological associations with sexual problems in a large general population sample. The results provide information on associations with sexual problems that were previously unreported, and they confirm findings from other types of study.

A major issue is the validity of an anonymous questionnaire such as this, where we have little information about the quality of the responses or about non-respondents. However, there are a number of arguments to be made in its favour. The prevalence figures found in this study are comparable to those found in other studies, for example 21% of respondents (95% CI 19, 22) in this study were defined as having anxiety and depression, which is similar to the 28% (95% CI 19, 38) described by Dowell *et al* for a UK adult population sample.¹⁸ Population studies have estimated a prevalence of benign prostatic hyperplasia of 20 to 40% in the 65–69 age group,²⁰ while in this study 30% (95% CI 19, 40) of men in this age group reported having prostate trouble. Furthermore, many of the associations were strong, not explained by confounding, statistically significant, and consistent across the four practices and with general clinical opinion.

Such comparisons are also helpful in suggesting that the response—lower than would be achieved by a survey of a less personal or potentially provocative problem—has not produced a biased respondent population. Even though the prevalence of sexual problems

might be higher in those who respond to such a questionnaire—and thus might lead to an overestimate of their occurrence in the general population—this should not affect the observed associations with other characteristics.

The different associations observed for male and female sexual problems were striking, with physical factors being the most consistent associations with male problems, and psychosocial factors with female problems. However, a more complicated pattern is found when the various sexual problems are considered separately.

A higher prevalence of erectile problems has previously been cited in men undergoing treatment for prostate cancer or benign prostatic hyperplasia,^{21, 22} but no population based work has formerly been carried out into the association between prostate problems and male sexual problems. Although this study provides no information on severity of prostate trouble, and the survey estimates only self reported prostate trouble, it is likely, from the results shown here, that reports of erectile problems were not exclusive to those with advanced prostatic disease. It is possible that, because of self reporting, there was confusion between prostatism and erectile problems. However, the questionnaire was labelled a “Health and lifestyle questionnaire”, and the physical problems checklist preceded the sexual problems section in the questionnaire.

In previous studies, erectile problems have been associated with the thiazide and β blocker types of antihypertensive therapy, but no work has linked ACE inhibitors and calcium channel blockers with sexual problems. This study shows that all antihypertensive agents have strong associations with male erectile functioning, accounting for up to 14% of erectile dysfunction in British men. ACE inhibitors showed the strongest association. These results show that, in men, treated hypertensives have more sexual problems than untreated hypertensives. This would not be expected if it were the hypertension itself causing the sexual problem. It might be expected if (a) severity of hypertension was the important factor or (b) the treatment was causal. Other previously suggested associations with antihypertensive therapy, such as orgasmic dysfunction in women, were not supported by our findings.

Psychological difficulties in men have a specific relation with premature ejaculation (anxiety) and inhibited enjoyment (depression), and associations such as these have been suggested previously.²³ We have estimated that 12% of premature ejaculation might be associated with anxiety severe enough to constitute a “case” and eight per cent of inhibited enjoyment in men might be associated with the presence of depression.

One of the most surprising findings was that, although marital difficulties were strongly linked to sexual problems in women—a finding that supports previous observations^{12, 24, 25}—there was no relation apparent between self reported marital difficulties and sexual problems in men. This lack of a relation with marital difficulties was consistent across the various

male sexual problems, and for each of the four practices in which the study was carried out. This contradicts work that has been carried out previously, some of which indicated that there was a particularly strong link in men.³ This lack of association may reflect that, in the general population, the broadly physical nature of male sexual problems is to the fore, and that psychosocial factors make a relatively small contribution or are in some way perceived as less important by men with sexual difficulties.

In contrast with marital difficulties, age was found to be an important association with sexual problems in men but less so in women. This was particularly true of erectile dysfunction, reflecting its strong association with physical symptoms, which rise in prevalence with age (prostatism, diabetes, hypertension and its treatment). When specific sexual problems were considered, some of the female sexual problems were found to be associated with age, but the patterns were not as strong as those found in men. In both men and women, the problems that had the strongest associations with age had the weakest links with psychological and social factors. In women, pre-menstrual tension, abnormal cervical smears, and hysterectomies were found to have no significant association with sexual problems.

Several strong associations between sexual problems and various other aspects of people's lives have been reported here. Although the results come from a self reporting methodology, both positive associations and lack of associations have been found, many of which confirm findings from different types of studies. However, the associations were established as part of a cross sectional survey, and the cause and effect relation between these factors remains unclear. Further work clarifying the direction of the associations is needed to establish whether effective treatment of sexual dysfunction would reduce the impact of or prevent psychological or social distress.

The evidence from this study seems to suggest that sexual problems can be separated into those that are dominated by age and physical factors, and those that are primarily associated with social and psychological factors. These findings have important consequences when considering the treatments that can be offered to people with sexual problems, although it is probable that in many cases both physical and psychological factors play a part in the aetiology. The management of hypertension and of prostate problems in men clearly needs to take account of the potential sexual problems that may occur, while the approach of the health services to the social and psychological health of women needs to take account of the strong associations with sexual problems.

Whether sexual problems are always a result of other aspects of peoples lives remains to be

clarified by further study, but other work to be published from this study indicates that a high proportion of sufferers would like more help from the health services. There is a wide range of physical and psychological approaches for the treatment of sexual dysfunctions described in the literature. Our study raises the possibility that if such approaches are effective, they may have a wide range of social and psychological benefits in the general population.

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Conflicts of interest: none.

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