

PAPERS AND SHORT REPORTS

Sexual dysfunction among middle aged women in the community

MADELINE OSBORN, KEITH HAWTON, DENNIS GATH

Abstract

In a community survey of women aged 35-59 sexual functioning was studied in the 436 women with partners. One third of these women had operationally defined sexual dysfunction: impaired sexual interest was identified in 17% of women (68/406), vaginal dryness in 17% (73/434), infrequency of orgasm in 16% (60/379), and dyspareunia in 8% (30/379). Sexual dysfunctions were statistically significantly associated with increasing age and also with psychiatric disorder, neuroticism, and marital disharmony. One in 10 women regarded themselves as having a sexual problem. These women were no older than women with sexual dysfunction who did not regard themselves as having a sexual problem. Nevertheless, they differed from the rest of the sample in having more psychiatric disorder, neuroticism, marital disharmony, and (in women still menstruating) psychological symptoms of the premenstrual syndrome. In the whole sample 16 women (4%) said that they would like help for a sexual problem.

The prevalence of sexual dysfunction in this series of women suggests that general practitioners should increase their alertness to the problem in their patients.

Introduction

Little is known about the frequency of sexual dysfunction among women in the general population. In the United States Kinsey *et al* described the range of sexual behaviour in a large but non-randomly selected sample of women in which those of high educational achievement were overrepresented.¹ That study was not specifically

concerned with sexual dysfunction. In a later study of "normal" couples in the United States other workers found sexual dysfunction in 63% of wives, especially problems with arousal and orgasm.² In a survey of Danish women aged 40 sexual problems were found in 35%³ and were most common in women of lower social class.⁴ There appears to have been no study of sexual dysfunction in the general population in the United Kingdom.

From hospital practice there is evidence that sexual dysfunctions may be closely associated with both gynaecological symptoms⁵ and psychiatric disorder,⁷ but nothing is known about these associations in the general population. Research findings are difficult to interpret because of problems of method, including use of atypical samples, low response rates, and lack of clear operational definitions of sexual dysfunction.

Recently a community survey was carried out in Oxford to examine associations between gynaecological symptoms and psychiatric disorder in over 500 middle aged women.⁸ During that survey the opportunity was taken to study sexual dysfunctions among the women who had sexual partners. The aims were to answer three questions about middle aged women in the community: (a) how many have operationally defined sexual dysfunction; (b) how many themselves report sexual problems; (c) how far these two aspects of sexual function are related to psychiatric, gynaecological, and marital factors.

Subjects and methods

The study was based on two Oxford group practices with computerised age and sex registers. The computer was used to identify all registered women aged 35-59 and to select from them a random sample of 600, consisting of 100-150 women in each of five age bands (35-39, 40-44, 45-49, 50-54, and 55-59). The 600 women were sent a letter signed by their general practitioner explaining the study and inviting them to participate. Of the 600 women, 521 (87%) agreed to be interviewed. This paper reports the findings for the 436 interviewed women who had a male sexual partner.

The women were interviewed in their homes by women research assistants from the department of psychiatry, all of whom were experienced in interviewing gynaecological patients. Semistructured interview schedules were used to elicit information about sexual functioning, gynaecological symptoms, psychiatric symptoms, and marital adjustment. The study of sexual functioning was thus presented to the women as part of a wider survey.

University Department of Psychiatry, Warneford Hospital, Oxford

MADELINE OSBORN, MRCPSYCH, clinical lecturer

KEITH HAWTON, DM, MRCPSYCH, consultant psychiatrist and clinical lecturer

DENNIS GATH, FRCP, FRCPSYCH, clinical reader

Correspondence to: Dr M Osborn, Department of Psychiatry, Manchester Royal Infirmary, Manchester 13.

SEXUAL FUNCTIONING

Sexual functioning was assessed with a semistructured interview schedule modified from one used in previous studies.^{9,10} The schedule consisted of 14 questions (see appendix). Most responses to the questions were scored on five point scales, either in terms of frequency (never, less than half, about half, more than half, all) or in terms of degree (for example, greatly decreased, slightly decreased, the same, slightly increased, greatly increased); some were scored on a yes/no basis. By using this interview two aspects of sexual functioning were examined: sexual dysfunction as operationally defined by us and sexual problems as identified by the women themselves.

TABLE 1—Prevalence of sexual dysfunctions stratified by age. Figures are numbers (percentages) of women

Sexual dysfunction	Age groups					
	35-39	40-44	45-49	50-54	55-59	All ages
Impaired sexual interest	4/89 (4)	7/87 (8)	12/74 (16)	22/75 (29)	23/81 (28)	68/406 (17)
Infrequency of orgasm	4/86 (5)	7/88 (8)	10/69 (14)	14/65 (22)	25/71 (35)	60/379 (16)
Dyspareunia	0/86	1/87 (1)	6/69 (9)	11/65 (17)	12/72 (17)	30/379 (8)
Vaginal dryness	7/90 (8)	11/89 (12)	13/79 (16)	20/78 (26)	22/98 (22)	73/434 (17)
Any of above	13/91 (14)	17/90 (19)	25/79 (32)	40/78 (51)	47/98 (48)	142/436 (33)

Four types of operationally defined sexual dysfunction were identified from the women's reported behaviour and experience. The first three were defined from their scores on five point scales and the fourth from their responses to a yes/no question. They were as follows: *impaired sexual interest*—that is, interest in sex reported to be markedly lower than before during most or all of the preceding year (question 9); *infrequency of orgasm*—that is, orgasm never experienced during sexual activity in the preceding three months (question 4); *dyspareunia*—that is, pain or discomfort causing difficulties during sexual intercourse more than half of the time during the previous three months (question 5); *vaginal dryness*—that is, vaginal dryness reported as causing difficulties during sexual intercourse in the previous three months (question 6).

Self identified sexual problems were ascertained by the women's responses to question 13, which specifically asked whether they thought that they had a sexual problem.

GYNAECOLOGICAL SYMPTOMS

Gynaecological symptoms were identified and rated with a detailed semistructured interview compiled with help from gynaecological colleagues. The interview covered all standard aspects of gynaecological inquiry. Syndromes such as the premenstrual syndrome, dysmenorrhoea, menorrhagia, and the menopause were operationally defined. For example, menorrhagia was rated in terms of frequency of flooding, frequency of clots, duration of menstrual periods, numbers of pads or tampons used, and similar indices.

PSYCHIATRIC MEASURES

Current psychiatric state was assessed by the present state examination¹¹ and the personality dimension of neuroticism rated with the Eysenck personality inventory.¹²

MARITAL ADJUSTMENT

Marital adjustment was assessed with a self report questionnaire, the modified social adjustment scale, which elicits information about various aspects of social functioning, including marriage.¹³ To obtain a measure of non-sexual marital adjustment scores on the marital section of the questionnaire were analysed after excluding items concerning sexual functioning.

STATISTICAL ANALYSIS

The data were analysed with the statistical package for the social sciences.¹⁴ Where appropriate, χ^2 tests (corrected for continuity), Mann-

Whitney U tests, *t* tests, analysis of variance, and discriminant function analysis were used to compare groups of subjects

Results

Of the 436 women interviewed in the study, 409 (94%) were married. The social class distribution was I, 54 women (12%); II, 118 women (27%); III, 193 women (44%); IV, 63 women (14%); V, four women (1%); other, four women (1%). Rates of response to individual questions ranged from 87% to 99%. Variation arose mainly because some questions did not apply to all women and occasionally because some women were reticent.

OPERATIONALLY DEFINED SEXUAL DYSFUNCTION

Prevalence—Of the 436 women interviewed, 142 (33%) had at least one operationally defined sexual dysfunction. In women of all ages the most frequent dysfunctions were impaired sexual interest (68/406 17%), vaginal dryness (73/434; 17%), and infrequency of orgasm (60/379; 16%). Dyspareunia (30/379; 8%) was less common (table I).

Operationally defined sexual dysfunction and age and social class—Women reporting any sexual dysfunction were significantly older (mean age 50.3 (SD 6.8) years) than the rest of the sample (mean age 45.5 (7.3) years; $t=6.53$, $p<0.0001$). Any sexual dysfunction was reported by 55 (21%) of the 260 women under age 50 and by 87 (49%) of the 176 women aged 50 and over ($\chi^2=39.94$; $df=1$; $p<0.0001$). The prevalence of the four individual dysfunctions increased with age and was particularly high above the age of 50 (table I). The only sexual dysfunction clearly associated with social class was impaired sexual interest, which was identified in 19 (12%) women in social classes I and II, 33 (18%) in social class III, and 15 (25%) in social classes IV and V ($\chi^2=6.00$; $df=2$; $p<0.05$).

Operationally defined sexual dysfunction and gynaecological factors—With one exception there was no significant association between operationally defined sexual dysfunction and measures of gynaecological functioning. The exception was that women with any type of sexual dysfunction were more likely than the rest to report stress incontinence occurring once a week or more often ($\chi^2=10.76$; $df=1$; $p<0.01$) regardless of age. Interestingly there was no association of sexual dysfunction with menopausal symptoms, such as flushes and sweats, vaginal dryness, and stopping of menstrual periods. Associations of this kind were examined in two ways—(a) by comparing four groups of women defined as still menstruating, menstrual periods stopped in past year, one to five years since last period, and more than five years since last period and (b) within each age band by comparing women who were still menstruating with those whose periods had stopped for at least three months. There was also no association between sexual dysfunction and a history of gynaecological surgery, such as hysterectomy or sterilisation.

Operationally defined sexual dysfunction and psychiatric factors—Forty two of the women (10%) were psychiatric "cases" as determined by level 5 and above on the index of definition of the present state examination.¹⁵ Being a psychiatric case was more common among women with impaired sexual interest, infrequency of orgasm, and dyspareunia but not vaginal dryness (table II). By comparison with the rest of the sample mean neuroticism scores on the Eysenck personality inventory were significantly higher in women with impaired sexual interest, dyspareunia, and vaginal dryness but not infrequency of orgasm (table II).

Operationally defined sexual dysfunction and marital adjustment—By comparison with the rest of the sample marital adjustment scores were significantly poorer in women with impaired sexual interest (mean scores 2.38 v 1.95; $t=4.43$, $p<0.001$) and in women with infrequent orgasm (mean scores 2.31 v 1.92; $t=3.75$, $p<0.001$). Neither dyspareunia nor vaginal dryness was associated with poor marital adjustment.

Relative contributions of age, psychiatric factors, and marital adjustment to operationally defined sexual dysfunction—Because sexual dysfunctions were significantly associated with several factors—that is, age, psychiatric disorder, neuroticism, and marital adjustment—discriminant function

TABLE II—Sexual dysfunctions: association with psychiatric disorder and neuroticism

Sexual dysfunction		No of women	Psychiatric disorder		Neuroticism scores	
			No (%)	χ^2	Mean	<i>t</i>
Impaired sexual function	{Yes	68	12 (18)	5.99**	11.4	2.91**
	{No	338	25 (7)		9.4	
Infrequency of orgasm	{Yes	60	11 (18)	7.56**	10.0	1.65
	{No	319	21 (7)		9.5	
Dyspareunia	{Yes	30	6 (20)	4.47**	12.3	2.75**
	{No	349	25 (7)		9.5	
Vaginal dryness	{Yes	73	7 (10)	0	11.0	2.32*
	{No	361	34 (9)		9.4	
Any of above	{Yes	142	18 (13)	1.75	10.8	2.87**
	{No	294	24 (8)		9.2	

* $p < 0.05$.** $p < 0.01$.

analyses were performed in order to identify which of these variables in combination best distinguished between women with and without sexual dysfunction. Women with any type of dysfunction were best distinguished by age (standardised canonical discriminant function coefficient=0.89), followed by marital adjustment (0.31) and neuroticism (0.25). Psychiatric disorder did not contribute significantly to this discrimination. Age, marital adjustment, and neuroticism, however, resulted in the correct classification of only 284/396 (72%) women. Moreover, women with sexual dysfunction particularly tended to be misclassified as non-dysfunctional. When the specific dysfunctions were examined separately the three factors (age, marital adjustment, and neuroticism) still failed to discriminate adequately between women with and without dysfunction.

SELF IDENTIFIED SEXUAL PROBLEMS

On direct inquiry 42 (10%) of the 436 women regarded themselves as having a sexual problem. These problems were not significantly related to age. Thus among the 55 women aged 35-49 with operationally defined dysfunction 14 (25%) reported sexual problems themselves, compared with 18 (21%) of the 85 women aged 50-59 (NS). Among 228 menstruating women, those with self identified sexual problems were more likely than the rest to report psychological (but not physical) symptoms of the premenstrual syndrome (Mann-Whitney U test=1280.5; $Z=2.50$; $p < 0.05$).

Compared with the rest of the sample women with self identified sexual problems showed the following significant differences: a greater proportion of psychiatric cases on the present state examination (13 (31%) *v* 26 (7%); $\chi^2=23.32$, $df=1$, $p < 0.0001$); higher neuroticism scores on the Eysenck personality inventory (13.4 *v* 9.3; $t=4.93$, $p < 0.001$); poorer marital adjustment on the modified social adjustment scale (mean scores 2.43 *v* 1.99; $t=3.76$, $p < 0.001$). In relation to marital adjustment 19 women with self identified sexual problems (45%) attributed these in part to other difficulties in their relationship with their partners.

RELATION BETWEEN OPERATIONALLY DEFINED SEXUAL DYSFUNCTION AND SELF IDENTIFIED SEXUAL PROBLEMS

Of the 142 women who had any operationally defined sexual dysfunction, only 32 (23%) regarded themselves as having a sexual problem. Among these 32 women impaired sexual interest was found in 22 (69%), infrequency of orgasm in 21 (66%), vaginal dryness in 18 (56%), and dyspareunia in 11 (34%). Among the 42 women with self identified sexual problems 10 (24%) had no operationally defined sexual dysfunction. Among the women with specific operationally defined dysfunctions the proportions who regarded themselves as having a sexual problem were: impaired sexual interest 22 (32%); infrequency of orgasm 21 (35%); dyspareunia 11 (37%); vaginal dryness 18 (25%). On direct inquiry 16 (38%) of the 42 women with self identified sexual problems said that they would wish to have treatment if it was available; these women represented 4% of the total sample. Only one woman was actually receiving help.

Discussion

We regard these findings as dependable for several reasons. The women were selected at random from patients registered in general practice and only a small proportion refused interview. Questioning

about sexual functioning was unlikely to disconcert the women because it was undertaken by experienced women interviewers near the end of an interview concerned mainly with gynaecological and psychiatric topics. The interview was semistructured and concerned both operationally defined dysfunctions and self perceived sexual problems, a point of difference from most other studies.

The main finding was that 142 (33%) of these middle aged women had one or more operationally defined dysfunction. In this subgroup the most frequent specific dysfunctions were reduced sexual interest (17%), vaginal dryness (17%), and infrequent orgasm (16%); 8% of women had dyspareunia. The overall rate (33%) was somewhat lower than the 45% found among 40 year old women in a Danish study, which used measures that were objective but different from ours,³ and considerably lower than the 63% found among non-randomly selected women in an American study, which used broader definitions of dysfunction.²

When factors associated with operationally defined dysfunction were examined the main finding was that dysfunction increased substantially with age. Thus one or more dysfunctions were found in 87 (49%) women aged 50 and over, as against 55 (21%) aged under 50.

As rated by the present state examination and the Eysenck personality inventory, both psychiatric "case" state and neuroticism were significantly more prevalent in three of the four groups with operationally defined sexual dysfunction than in women without sexual dysfunction. This finding for women in the general population is consistent with the clinical impression that sexual dysfunction is common in psychiatric patients and with research findings among depressed women.⁷ A further positive finding—that operationally defined sexual dysfunction was associated with a poor marital relationship—was also as expected.

The main negative finding was that with the single exception of stress incontinence operationally defined sexual dysfunction was not increased among women with gynaecological symptoms. The association with stress incontinence is in keeping with a report on women attending an incontinence clinic.¹⁶ The lack of an association between sexual dysfunction and disappearance of menstruation is perhaps surprising; elsewhere increased sexual dysfunction has been reported among women attending a menopause clinic.⁶ Nevertheless, attenders at such clinics may be unusual in several ways, and our results are consistent with those of an earlier postal survey of women in the community.¹⁷ The finding that operationally defined sexual dysfunction was not associated with a history of gynaecological surgery agrees with results from other prospective research.^{9,10}

When a discriminant function analysis was done age emerged as the most important determinant of operationally defined dysfunction; neuroticism and poor quality of marriage also contributed but psychiatric case state did not. It is understandable that age should contribute to sexual dysfunction. It is much less clear how far neuroticism, marital disharmony, and psychiatric case state are aetiologically related to one another and to sexual dysfunction and how far all these factors may be related to other potentially important factors, such as upbringing and previous sexual experience.

Whereas operationally defined sexual dysfunctions were present in a third of the women, sexual problems were identified by only 10% of the women themselves. None the less, self identified problems were very significantly associated with case state as assessed by the present state examination, neuroticism, and poor marital adjustment.

Only a third of women with operationally defined sexual dysfunction identified themselves as having a sexual problem. This may have been because older women accepted dysfunctions uncomplainingly as appropriate to their age, whereas younger women were less accepting. (Though operationally defined dysfunctions were significantly more frequent in women aged 50 and over, self identified problems were as common in women under 50 as those aged 50 and over.)

The prevalence of sexual dysfunction found in this study was such as to suggest that general practitioners should be alert to

detecting it. Women with such problems could be treated by general practitioners or be referred for specialist treatment, though in this study comparatively few women expressed a wish for help.

Thanks are expressed to Drs M K Anscombe, M J V Bull, S R Byrne, P Lawrence, H D Leggatt, A I M Neill, D H Richards, A Taylor, and S J Wood, who kindly allowed their general practice patients to be seen. We are also grateful to Drs P Cooper, J Bancroft, and J Ferguson for advice; Virginia Mander for secretarial help; and Ann Day, Alison Bond, and Clare Passingham for carrying out the interviews and helping with data analysis. Financial support was provided by the Oxford Regional Health Authority and Oxfordshire Health Authority.

Appendix

Questions included in sexual inquiry

- (1) What would be your average frequency of sexual intercourse over the past three months?
- (2) Over the past three months on what proportion of occasions that you made love did you find it a pleasant experience?
- (3) Over the past three months on what proportion of occasions that you made love did you find it an unpleasant experience?
- (4) How often during the past three months have you experienced a climax during sex?
- (5) How often during the past three months have you had any difficulties in sexual intercourse because of discomfort (for example, pain)?
 - (6a) Do you experience vaginal dryness?
 - (6b) If yes does it present a problem in sexual intercourse?
- (7) Over the past three months have you ever not had sexual intercourse because of excessive menstruation?
- (8) Has your interest in sex changed during the past year?
- (9) Has your interest in having sex been low during the past year?
- (10) Has your partner experienced any difficulties with sex? (Probe impotence, premature ejaculation, low sex drive, etc)

- (11) Have you had problems with sex because of the way you get on with your partner in general? (Probe conflict, quarrelling, apathy, drifting apart)
- (12) How satisfied are you with your sexual relationship overall?
- (13) Do you regard yourself as having a problem with sex?
- (14) If help were available for such a problem would you like such help?

References

- 1 Kinsey AC, Pomeroy WB, Gebhard PH. *Sexual behaviour in the human female*. Philadelphia: Saunders, 1953.
- 2 Frank E, Anderson C, Rubenstein D. Frequency of sexual dysfunction in "normal" couples. *N Engl J Med* 1978;299:111-5.
- 3 Garde K, Lunde I. Female sexual behaviour: a study in a random sample of 40-year-old women. *Maturitas* 1980;2:225-40.
- 4 Garde K, Lunde I. Social background and social status: influence on female sexual behaviour. A random sample of 40-year-old Danish women. *Maturitas* 1980;2:241-6.
- 5 Levine SB, Yost MA. Frequency of sexual dysfunction in a general gynecological clinic: an epidemiological approach. *Arch Sex Behav* 1976;5:229-38.
- 6 Moore B, Gustafson R, Studd J. Experience of a National Health Service menopause clinic. *Curr Med Res Opin* 1975;3(suppl 3):42-55.
- 7 Weissman MM, Paykel ES. *The depressed woman: a study of social relationships*. Chicago: University of Chicago Press, 1974.
- 8 Gath D, Osborn M, Bungay G, et al. Psychiatric disorder and gynaecological symptoms in middle aged women: a community survey. *Br Med J* 1987;294:213-8.
- 9 Gath D, Cooper P, Day A. Hysterectomy and psychiatric disorder: I. Levels of psychiatric morbidity before and after hysterectomy. *Br J Psychiatry* 1982;140:335-50.
- 10 Cooper P, Gath D, Fieldsend R, Rose N. Psychological and physical outcome after elective tubal sterilisation. *J Psychosom Res* 1981;25:357-60.
- 11 Wing JK, Cooper J, Sartorius N. *The measurement and classification of psychiatric symptoms*. Cambridge: Cambridge University Press, 1974.
- 12 Eysenck HJ, Eysenck SBG. *Manual of the Eysenck personality inventory*. London: University of London Press, 1964.
- 13 Cooper P, Osborn M, Gath D, Feggetter G. Evaluation of a modified self-report measure of social adjustment. *Br J Psychiatry* 1982;141:68-78.
- 14 Nie NH, Hull HC, Jenkins JG, Steinbrenner K, Bent DH. *SPSS: statistical package for the social sciences*. New York: McGraw-Hill, 1975.
- 15 Wing JK, Mann SA, Leff JP, Nixon JM. The concept of a "case" in psychiatric population surveys. *Psychol Med* 1978;8:203-17.
- 16 Suthurst JR. Sexual dysfunction and urinary incontinence. *Br J Obstet Gynaecol* 1979;86:387-8.
- 17 Bungay GT, Vessey MP, McPherson CK. Study of symptoms in middle life with special reference to the menopause. *Br Med J* 1980;281:181-3.

(Accepted 1 December 1987)

Outcome of pregnancy in underweight women after spontaneous and induced ovulation

Z M VAN DER SPUY, P J STEER, M MCCUSKER, S J STEELE, H S JACOBS

Abstract

Low maternal weight before pregnancy and poor weight gain during pregnancy are known to result in an increased prevalence of low birthweight infants. Low body weight is also an important cause of amenorrhoea. The hypothesis that amenorrhoeic underweight women who become pregnant after induction of ovulation are more at risk of delivering low birthweight infants than

underweight women who ovulate spontaneously was investigated. Forty one pregnant women in whom ovulation had been induced and 1212 in whom ovulation was spontaneous were studied. Women ovulating spontaneously whose weight was normal and who showed good weight gain during pregnancy (>450 g a week) had the lowest incidence (6%) of babies who were small for gestational age. Underweight women (body mass index <19.1) who ovulated spontaneously had a threefold increased risk of delivering babies who were small for gestational age (18%). Overall, the women in whom ovulation had been induced had an even higher risk of babies who were small for dates (25%), and this risk was greatest (54%) in those who were underweight.

The outcome of pregnancy is related to weight before conception, which in many cases reflects nutritional state; lack of spontaneous ovulation indicates an increased risk of producing a small for dates infant. The most suitable treatment for infertility secondary to weight related amenorrhoea is therefore dietary rather than induction of ovulation.

Introduction

The commonest cause of amenorrhoea resulting in infertility in our patients is subnormal body weight. The developing fetus is vulnerable to maternal dietary deficiencies and, contrary to earlier

Cobbold Laboratories and Department of Obstetrics and Gynaecology, University College and Middlesex School of Medicine, London W1N 8AA

Z M VAN DER SPUY, PHD, MRCOG, research assistant and honorary senior registrar

S J STEELE, FRCS, FRCOG, director, academic department of obstetrics and gynaecology

H S JACOBS, MD, FRCP, professor of reproductive endocrinology

Department of Obstetrics and Gynaecology, St Mary's Hospital Medical School, London W2 1PG

P J STEER, MD, MRCOG, senior lecturer and honorary consultant
M MCCUSKER, BSC, MMedSci, research assistant

Correspondence to: Ms Z M van der Spuy, Gynaecological Endocrine Laboratory Department of Obstetrics and Gynaecology, University of Cape Town Medical School, Groote Schuur Hospital, Observatory, Cape Town 7925, Republic of South Africa.