Abstract

OBJECTIVE: To estimate the prevalence of self-reported sexual problems (any, desire, arousal, and orgasm), the prevalence of problems accompanied by personal distress, and to describe related correlates.

METHODS: The 31,581 female respondents aged 18 years and older were from 50,002 households sampled from a national research panel representative of U.S. women. Correlates of each distressing sexual problem were evaluated using multiple logistic regression techniques.

RESULTS: The age-adjusted point prevalence of any sexual problem was 43.1% and 22.2% for sexually related personal distress (defined as a score of at least 15 on Female Sexual Distress Scale). Any distressing sexual problem (defined as reporting both a sexual problem and sexually related personal distress, Female Sexual Distress Scale score of at least 15) occurred in 12.0% of respondents and was more common in women aged 45–64 years (14.8%) than in younger (10.8%) or older (8.9%) women. Correlates of distressing sexual problems included poor self-assessed health, low education level, depression, anxiety, thyroid conditions, and urinary incontinence.
CONCLUSION: The prevalence of distressing sexual problems peaked in middle-aged women and was considerably lower than the prevalence of sexual problems. This underlines the importance of assessing the prevalence of sexually related personal distress in accurately estimating the prevalence of sexual problems that may require clinical intervention.

LEVEL OF EVIDENCE: III

Female sexual dysfunction is a term used to describe various sexual problems, such as low desire or interest, diminished arousal, orgasmic difficulties, and dyspareunia. Female sexual dysfunction is considered common, with a widely quoted prevalence estimate of 43% from the U.S. National Health and Social Life Survey and similar estimates from other large, population-based surveys in the United States and the United Kingdom. Most epidemiologic definitions of female sexual dysfunction refer to sexual problems without requiring sexually related personal distress to be present, whereas current diagnostic guidelines from the American Psychiatric Association and Food and Drug Administration require personal distress as part of the diagnostic criteria for “dysfunction.” The American Urological Association Foundation emphasizes the clinical importance of distress in its revised definitions of sexual disorders.

Relatively few published epidemiologic studies of female sexual dysfunction have measured personal distress. These studies found that only a small proportion of women reporting sexual problems consider them personally distressing. To date, only the Women’s International Study of Health and Sexuality (WISHHeS) has published prevalence statistics for the United States for sexual problems combined with distress, but this study was limited to sexual desire problems.

The current study, Prevalence of Female Sexual Problems Associated with Distress and Determinants of Treatment Seeking (PRESIDE), is a cross-sectional, population-based survey of female adults in the United States. The purpose was to estimate the prevalence of self-reported sexual problems of desire, arousal, and orgasm, the prevalence of sexually related personal distress, and their combination, and to identify associated factors.

MATERIALS AND METHODS

The source population was the TNS [Taylor Nelson Sofres] 6th dimension Global Access Panel. This research panel, balanced on U.S. Census demographic factors, has been used in studies of various medical problems, including urinary incontinence in women. The study sample of 50,002 households was designed to represent the U.S. population according to key demographic characteristics (age, race, marital status, education, and income), and the size was determined by an estimated response rate of 50% for a desired yield of 25,000 respondents. Institutional review board approval by the New England Research Institutes was obtained under 45 CFR 46 110(b), category 7 (waiver of written informed consent documentation). Mailed questionnaires were completed during August and September 2006 by eligible participants, a female head of household aged 18 years or older. One reminder postcard was sent within 2 weeks after the questionnaire had been mailed. Demographic information was compiled for nonresponders and compared with responders as key demographic information was available for the entire panel.

Sexual problems were assessed in all respondents without limiting to women reporting recent sexual activity or having a current partner, using the female version of the Changes in Sexual Functioning Questionnaire short-form (CSFQ-14), an instrument with reported reliability and construct validity. The CSFQ-14 contains 14 items that use 5-point scales to capture a respondent’s self-evaluation of her current sexual behaviors and problems, from 1=never to 5=every day. For the current analysis only the two clinically relevant response categories of “never=1” or “rarely=2” were used to define sexual problems, similar to the methodology used in WISHHeS. Questions used to define problems of desire, arousal, and orgasm are listed in the footnotes to The single question to identify problems of desire, “How often do you desire to engage in sexual activity,” has direct face validity in a clinical setting. Any sexual problem was defined as the presence of any of the three individual problems of desire, arousal, or orgasm. Sexual pain problems were not assessed, because a physical examination is required for evaluation of dyspareunia.
Sexually related personal distress was measured with the Female Sexual Distress Scale (FSDS), an instrument with high reliability, discriminative ability, and construct validity. The FSDS measures a woman's feelings concerning distress about her sex life, assessing guilt, frustration, stress, worry, anger, embarrassment, and unhappiness using a 30-day recall period and a 5-point scale (0=never to 4=always) for each of the 12 items. Responses are summed for an overall score (range 0–48). A score of 15 or higher indicates sexual distress. A sexual problem of desire, arousal, or orgasm was considered distressing if associated with personal distress (FSDS score of 15 or more) in accordance with American Psychiatric Association guidelines.

Covariates included demographic (age, marital and partner status, education, employment, race, ethnicity, and 2005 household income) and health-related and reproductive history information (parity, current use of hormonal contraceptives or hormone therapy, menopausal status, self-assessed health, history of chronic medical conditions, current depression, use of selected medications, and smoking status). Variables were selected based on previously published or expected associations. Quality of life was measured with the Short Form 12 Health Survey (SF-12 version 1).

Statistical analyses were performed using SAS 9.1 (SAS Institute Inc., Cary, NC). The prevalence of each category of sexual problem (and combination of problems) and sexually related personal distress were estimated with corresponding 95% asymptotic normal confidence intervals (CIs). In addition, prevalence estimates adjusted for nonresponse associated with demographic factors were calculated using poststratification methods. Prevalence estimates were also adjusted for differences between the study population and the U.S. female population, using age, race, and ethnicity (2005 U.S. Census).

To investigate patterns of sexual problems, distress, and distressing sexual problems by age, we calculated the prevalence for reproductive-age women (18–44 years), midaged women (45–64 years), and elderly women (65 years or older).

Age-adjusted prevalence estimates of chronic medical conditions from the current study were descriptively compared with available age-adjusted estimates in U.S. adult females using the 2005 National Health Interview Survey, and age trends of mean SF-12 scores were compared with published estimates from the U.S. female population.

The frequency distribution of covariates for each distressing sexual problem was examined. Multivariable logistic regression was used descriptively to examine all covariates without using model reduction techniques. Results are displayed as adjusted odds ratios with corresponding 95% CI. Based on an observed curvilinear distribution of age, the square of age was used in the multivariable models. Because the education and income variables were strongly correlated, only education was included in the models.

RESULTS

The response rate was 63% (n=31,581). The mean age of respondents was 49 years (range 18–102 years), most (81%) were white, 58% had an education level beyond high school, and 54% were employed either full or part time. Most (70%) respondents had a current partner, and 62% were premenopausal. About a quarter (27%) of the sample reported current symptoms of depression, and 13% reported use of antidepressants; 72% reported at least one chronic medical condition other than depression, most commonly hypertension, arthritis, anxiety, thyroid problems, asthma, heart disease, and diabetes. Nonrespondents were younger and more frequently single than respondents and more likely to be employed and have a higher household income. Racial and education distributions were similar between respondents and nonrespondents.

The most common sexual problem was low desire, with an unadjusted prevalence of 38.7%; less common were low arousal (26.1%) and orgasm difficulties (20.5%). The prevalence of any sexual
problem was 44.2%. Sexually related personal distress (FSDS 15 or more) was observed in 22.8% of respondents. Adjustment for age nonresponse resulted in slightly higher prevalence estimates for all sexual problems and a slightly lower estimate for sexually related personal distress. Adjustment for race and ethnicity nonresponse had little effect (data not shown). Age stratification revealed a sharp increase in the prevalence of all three sexual problems by age group. Only 27.2% of women aged 18–44 years reported any of the three problems, compared with 44.6% of midaged women and 80.1% of elderly women. Low desire was the most common of the three problems among all age groups. Sexually related personal distress was lowest in elderly women (12.6%), and present in 25.5% and 24.4% of midaged and younger women, respectively.

The prevalence of any of the three sexual problems associated with sexually related personal distress (FSDS 15 or more) was 12.0%. The age-stratified prevalence of any distressing sexual problem was highest in women aged 45–64 years (14.8%), lowest in women 65 years or older (8.9%), and intermediate in women aged 18–44 years (10.8%). A similar age pattern was seen for distressing desire and arousal problems, but not for orgasm problems, in which the prevalence was similar in midaged and in older women. The prevalence by 10-year age groups provides more detailed information of this underlying age pattern. The joint prevalence of distressing low desire with another distressing sexual problem was less than 5%, and the combination of all three occurred in only 2.3% of women. Adjusting for nonresponse regarding age, race, ethnicity, marital status, education, employment, or income changed the unadjusted point prevalence estimates for the distressing sexual problems by 0.2% or less (data not shown). The same was observed when adjusting for race or ethnicity according to the 2005 U.S. female population. The unadjusted and U.S. population age-adjusted estimates for distressing sexual problems were desire 10.0% and 9.5%; arousal 5.4% and 5.1%; orgasm 4.7% and 4.6%; and any 12.0% and 11.5%, respectively.

For distressing desire problems, socioeconomic and demographic variables that were independently and significantly associated included age, race, marital status, partner status, education, and level of education. The odds of distressing desire problems were higher in middle-aged (35–64 years) women than in younger or older women, and were twice as high in married as in single women, but higher in women without a current partner. The odds increased with each category of worsening self-assessed health compared with excellent health and were approximately 20% higher in postmenopausal than in premenopausal women. Medical conditions positively associated with distressing problems of desire were current depression (odds ratio 2.34), thyroid problems, anxiety, and urinary incontinence.

The observed associations of sociodemographic factors with distressing arousal problems were similar to those observed for desire, except for race. Similar to desire problems, a strong positive association was seen with worsening self-assessed health and current depression. Compared with premenopausal women, the odds of arousal problems with distress were 34% higher in naturally postmenopausal and 54% higher in surgically postmenopausal women. Medical conditions related to increased odds of arousal problems were thyroid problems, arthritis, anxiety, urinary incontinence, and inflammatory or irritable bowel disease.

Sociodemographic variables related to orgasm problems with associated distress were age and education (about 40% more likely in women with lower education). Unlike desire or arousal problems, neither married women nor women without a current partner were more likely to report distressing orgasm problems; instead, a positive association was seen with single (never married) women compared with divorced, widowed, or separated women. Compared with premenopause, only surgical postmenopause was associated with orgasm problems (odds ratio 1.34). Consistent with the other problems, worsening health status and current depression were strongly associated with increased odds of orgasm problems. Medical conditions related to a higher odds of orgasm problems with associated distress included thyroid problems, arthritis, anxiety, and urinary incontinence.

Correlates of any sexual problem associated with distress were very similar to those observed for desire problems. Parity, taking contraceptives or hormone therapy, and taking medication to lower high blood pressure or high cholesterol were not significantly associated with any of the distressing sexual problems.

DISCUSSION
Self-reported sexual problems, especially low sexual desire, are common, identified in about 40% of U.S. women in this study. Sexual problems associated with personal distress were much less common, although reported by approximately 12% of women. Overall, sexual problems increased with age; however, distressing sexual problems were more common in midaged women than in younger or older women. Despite differences in study designs and nomenclature, the estimated prevalence of any sexual problem found in this study is quite similar to estimates of sexual problems without the distress criterion from other U.S. representative samples and to sexual problems considered bothersome by older U.S. women.

The age-adjusted prevalence of sexually related personal distress (22.2%) was comparable to the prevalence of marked sexual distress of 22.8% from a U.S. national sample, but published U.S. population-based estimates of distressing sexual problems are not available for comparison. One other study (WISHes) used similar methodology to define desire problems with associated distress. Our prevalence results by 10-year age bands for women ages 20–69 years (6%, 10%, 11%, 13%, and 10%) are comparable to that of European women (7%, 6%, 10%, 13%, and 12%) in WISHes, but lower than that in U.S. women (15%, 19%, 15%, 13%, and 12%) in WISHes. However WISHes was restricted to women with a current sexual partner and the sample size was much smaller than ours.

As for representativeness, the age trends of mean SF-12 scores in our respondents were quite similar to that of U.S. females, as was the prevalence of antidepressant use, cigarette smoking, stroke, asthma, arthritis, and kidney disease. Our respondents had a somewhat higher prevalence of hypertension and diabetes and a slightly lower prevalence of coronary heart disease, any heart condition, ulcer, and cancer than U.S. women.

The prevalence of distressing sexual problems in our sample, particularly desire, peaked in the middle years and declined at the oldest ages. Population-based studies in men have shown a consistent trend toward more frequent sexual dysfunction with increasing age, but the same is not true for women, for whom positive, negative, and no apparent age associations are reported. Some studies observed that low desire is more common in younger than older women, whereas others showed an increasing prevalence with age. Two studies reported low desire more frequently in older than younger women, but sexually related distress was more common in younger women. The association of age with problems of orgasm and arousal is inconsistent, but an age-related increase in lubrication problems is well documented.

Consistent with the literature, women in this study reporting current depression had more than twice the odds of each type of distressing sexual problem than nondepressed women. Some medical conditions, such as diabetes, hypertension, and heart disease are well-known correlates of male sexual problems, but results from population-based studies in women do not confirm such strong and consistent associations. Neither heart disease nor diabetes was correlated with any of the sexual problems examined in this study.

The finding that sexual problems were greatest in elderly women, but distressing sexual problems least prevalent in this age group is of particular interest and similar to results from WISHes for distressing desire problems. Possible reasons for low levels of distress despite a high prevalence of sexual problems in older women might include the significance of other medical problems, changes in partner status and sexual function, partner physical health problems, or the increased importance of other factors in relationships of long duration. Data provided by this survey are unable to address the reason for this finding.

Strengths of the current study include a considerably larger sample size than any other comparable published population-based study, a wide age range, and the use of instruments with published psychometric properties to measure sexual problems and related distress in all respondents, whether or not they were sexually active or with a current partner. Several limitations of the study are worth noting. To increase response rates to sensitive questions, we used a research panel that was not randomly selected. Therefore, respondents in the sample may be more health conscious, self-focused, and have more time to answer mailed questionnaires than females in a random sample. In addition, despite using a research panel, the response rate was only 63%, although comparable to the average response rate (64%) in 54 community-based surveys of female sexual problems. The lack of effect that adjusting for demographic factors for nonresponse had and the limited influence of age adjustment for the U.S. female population on the observed prevalence estimates of distressing sexual problems increases confidence.
that bias according to demographic factors was minimal. Another limitation is that classified sexual problems and distress were based on self-reported information rather than a clinical evaluation, because personally interviewing a large population of women nationwide would be impractical. Last, because the current study was cross-sectional, we cannot attribute causality to any of the correlates identified. Longitudinal data would be useful to determine what intrinsic and extrinsic factors may be related to changes in sexual distress over time.

In conclusion, the results of this study show that sexual problems associated with personal distress occur in about 12% of adult U.S. women, which is much less common than previously published and widely quoted prevalence estimates of about 40% for sexual problems (with unknown presence of distress). Still, the proportion of women with distressing sexual problems is not trivial, particularly for women at mid life, because one in eight women aged 45–64 years had distress associated with desire problems and about one in 15 with arousal and orgasm problems. An accurate estimate of prevalence and identification of correlates of distressing female sexual problems has important implications for the care of women. Clinicians assessing women with sexual problems should be certain to evaluate the level of distress associated with such problems.

REFERENCES

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