International Journal of Impotence Research (2005) 17, 39–57

0955-9930/05 $30.00
www.nature.com/ijir

Sexual problems among women and men aged 40–80 y: prevalence and correlates identified in the Global Study of Sexual Attitudes and Behaviors

EO Laumann[1]*, A Nicolosi[2,3], DB Glasser[4], A Paik[5], C Gingell[6], E Moreira[7] and T Wang[1] for the GSSAB Investigators' Group

[1]*University of Chicago, Chicago, USA;* [2]*National Research Council, Milan, Italy;* [3]*Columbia University, NY, USA;* [4]*Pfizer Inc, NY, USA;* [5]*University of Iowa, IA, USA;* [6]*Southmead Hospital, Bristol, UK;* [7]*Oswaldo Cruz Foundation, Bahia, Brazil*

The Global Study of Sexual Attitudes and Behaviors (GSSAB) is an international survey of various aspects of sex and relationships among adults aged 40–80 y. An analysis of GSSAB data was performed to estimate the prevalence and correlates of sexual problems in 13 882 women and 13 618 men from 29 countries. The overall response rate was modest; however, the estimates of prevalence of sexual problems are comparable with published values. Several factors consistently elevated the likelihood of sexual problems. Age was an important correlate of lubrication difficulties among women and of several sexual problems, including a lack of interest in sex, the inability to reach orgasm, and erectile difficulties among men. We conclude that sexual difficulties are relatively common among mature adults throughout the world. Sexual problems tend to be more associated with physical health and aging among men than women.
International Journal of Impotence Research (2005) **17,** 39–57. doi:10.1038/sj.ijir.3901250
Published online 24 June 2004

Keywords: epidemiology; health surveys; impotence; prevalence; sexual disorders; risk factors

Introduction

There is an ongoing debate regarding the nature of gender differences in sexual problems.[1] One feature of this debate centers on the extent to which biological, psychosocial, and cultural factors each contribute to these various difficulties. Yet, assessments of their relative influence on the prevalence of sexual problems have been hampered by the lack of systematic, cross-cultural population studies. A recent review of 52 studies on sexual dysfunctions, for example, found that few were based on broadly representative samples, and even fewer included information on multiple sexual problems in both women and men.[2] Indeed, the majority of studies typically focus on erectile dysfunction (ED). With most epidemiological studies focused on North American and Western European populations, findings from other regions of the world are often based on smaller studies involving clinical series or other samples that are not broadly representative. The Global Study of Sexual Attitudes and Behaviors (GSSAB) was recently conducted to investigate health status, as well as attitudes, beliefs, behaviors, and satisfaction regarding sex and relationships among middle-aged and older adults in 29 countries.

The objectives of the current analysis of the GSSAB include the following: (1) to estimate the prevalence of sexual problems among women and men for seven regional clusters and (2) to identify factors that increase the likelihood of reporting selected, common sexual problems by gender and regional cluster.

Methods

The GSSAB is the first large, multi-country survey to systematically study attitudes, beliefs, and health in sexual relationships in middle-aged and older adults. The survey involved 13 882 women and 13 618 men, aged 40–80 years, in 29 countries, representing many world regions. In Europe (Austria,

*Correspondence: EO Laumann, PhD, Department of Sociology, University of Chicago, 5848 S University Avenue, Chicago, IL 60637, USA.
E-mail: ob01@midway.uchicago.edu
Received 11 November 2003; revised 8 April 2004; accepted 20 May 2004

Belgium, France, Germany, Italy, Spain, Sweden, and the United Kingdom), North America (Canada and USA), Australia, New Zealand, Israel, and Brazil, samples were based on random-digit-dialing and respondents were selected randomly within households by asking for the person between 40 and 80 y of age with the most recent birthday. Sampling in Middle Eastern countries (Algeria, Egypt, Morocco, and Turkey) employed a door-to-door protocol, where households were selected using random starting points, and the study staff contacted every third house in several major cities. In Asian countries (China, Hong Kong (although Hong Kong is part of China, it is listed separately because of its distinct socioeconomic and cultural characteristics), Korea, Indonesia, Malaysia, Philippines, Singapore, Taiwan, and Thailand), an intercept protocol was employed in major cities. Both the door-to-door and intercept protocols represent accepted survey methods for each country, but are likely to be more reflective of their urban populations. The standard sample size of 1500 (equal numbers of men and women) was used in Germany, Sweden, UK, France, Italy, Spain, Australia, Turkey, and Japan. A sample size of 500 was used in Austria, Belgium, New Zealand, Algeria, China, Hong Kong, Taiwan, Indonesia, Malaysia, Philippines, Singapore, and Thailand. In the remaining countries, the sample sizes were: Israel 505, Canada 1007, South Africa 999, USA 1491, Brazil 1199, Mexico 506, Egypt 584, Morocco 509, and Korea 1200.

In Europe, North America, Australia, New Zealand, Israel, and Brazil, telephone interviews were conducted via Computer-Assisted Telephone Interview (CATI). Due to the sensitive nature of the topic, refusals were not called back. The door-to-door and intercept protocols employed in Algeria, Egypt, Morocco, Turkey, China, Korea, Taiwan, Indonesia, Malaysia, the Philippines, Singapore, South Africa, and Thailand used self-completed questionnaires. There were two exceptions to the above-mentioned data-collection strategy. In Japan, a mailed, self-completed questionnaire was used, and in Mexico, a mixed-mode method of in-person and telephone interviews was employed. The mean overall response rate was 19%, with the mean rate for the telephone interviews at 15% and 30% for the self-completed questionnaires and 33% for the mailed, self-completed questionnaires used in Japan. Response rate ranged from 8–55% in the various countries.

Verbal consent was obtained from all study participants. They were also informed about the following issues: (1) all information obtained would be used in aggregate, (2) responses were voluntary, (3) the confidentiality and the privacy of their responses were protected because no personal identifiers were coded into the interview instruments, (4) no list of respondents was retained, and (5) 'refusers' were not called back in an effort to convert them to participating respondents.

The questionnaire asked for information about demographics; health; relationships and general satisfaction with life as a whole; as well as individual behavior, practices, attitudes, and beliefs regarding sexuality. The presence of sexual problems was assessed using the following question: 'During the last 12 months have you ever experienced any of the following for a period of 2 months or more when you: (1) lacked interest in having sex; (2) were unable to reach climax (experience orgasm); (3) reached climax (experienced orgasm) too quickly; (4) experienced physical pain during sex; (5) did not find sex pleasurable; (6) had trouble achieving or maintaining an erection (men only); and (7) had trouble becoming adequately lubricated (women only)?'. Respondents were permitted to answer yes to all that applied. For those indicating the presence of a specific sexual problem, the relative severity was assessed in a follow-up question: 'For each of these experiences, how often would you say this has occurred during the last 12 months? Would you say that this has occurred occasionally, sometimes, or frequently?'.

We restricted our analyses to only those respondents who had had intercourse at least once in the year prior to being interviewed. This procedure reduced our sample size to 9000 women and 11 205 men and tended to drop older respondents, who were sexually inactive more frequently. Thus, the prevalence of sexual problems was calculated by dividing the total number of self-reports for each problem by the total number of respondents, who were sexually active in the year prior to being interviewed, by gender. Country-specific data were grouped into clusters, according to geographic proximity, shared cultural backgrounds, and similar modes of data collection. Using the age distribution of the entire sample in the GSSAB for women and men separately, we age-standardized the prevalence estimates for each regional cluster.

A number of possible correlates of sexual problems were investigated. These included age, self-reported measures of general health status, current level of physical activity, self-report of a diagnosed vascular condition (including hypertension, diabetes, heart disease, high cholesterol, and having had a stroke), self-report of a diagnosis of depression, prostate disease (among men), having had a hysterectomy (among women), and whether respondents currently or formerly smoked. Respondents also reported how often they thought about sex—a proxy for their current level of sexual libido—and whether they agreed with the belief that aging reduced sexual desire and/or behavior. Other self-reported measures included educational attainment, whether respondents believed that their religion guided their sexual behavior, experience with divorce and financial problems in the 3-y period

prior to being interviewed, the expected time horizon of their current relationships, the frequency of engaging in sex, whether they usually engaged in foreplay, and whether they were sexually exclusive.

We utilized logistic regression in this study. This approach produced adjusted odds ratios (ORs), which indicate the odds of reporting the particular sexual problem among those with a given characteristic (eg poor health) relative to people in a reference category (eg good health), controlling for all other factors in the regression analysis. In these analyses, the presence of a sexual problem included only those respondents who reported *'sometimes'* or *'frequently'* having the problem (ie those who indicated *'occasionally'* were recoded to indicate no sexual problem). In order to evaluate the validity of pooling a specific country with the others in a regional cluster, we employed a series of interaction models between covariates and country dummy variables to test whether a specific country could be pooled in an analysis. Countries with covariate patterns that were significantly different from the pooled sample were dropped from the analysis (results are available upon request). Thus, we dropped the following countries: (1) Austria, the UK, France, Italy, South Africa, Algeria, Taiwan, Indonesia, Philippines, and Singapore in logistic regressions of orgasm problems; (2) Sweden, Israel, Mexico, Egypt, Taiwan, and Philippines in logistic regressions of lubrication difficulties, (3) Morocco, Korea, Malaysia, Philippines, and Singapore in logistic regressions of early ejaculation; and (4) the UK, South Africa, Algeria, Morocco, Korea, Malaysia, and Thailand in logistic regressions of erectile difficulties.

Results

Prevalence of sexual problems among women and men

Tables 1a and b present the prevalence of sexual problems of 2 months or more duration, subdivided by frequency of occurrence, among women and men, respectively. In most cases, the reported prevalence of sexual problems was higher in East Asia and Southeast Asia than in other regions of the world. For women, lack of interest in sex and inability to reach orgasm were the most common sexual problems across the world regions, ranging from 26 to 43% and 18 to 41%, respectively. For men, early ejaculation was the most common complaint, with 31% of men interviewed in Southeast Asia reporting this problem. Finally, erectile difficulties among men and lubrication difficulties among women were both relatively common and showed similar prevalence across most regions. Notable exceptions were East Asia and Southeast Asia, where the prevalence of both complaints was approximately double that reported in other regions.

Factors associated with the likelihood of reporting sexual problems

We analyzed the factors associated with the likelihood of reporting sexual problems among women and men. We focused on more severe problems: only those respondents indicating a periodic (sometimes) or frequent sexual problem in the 12 months prior to being interviewed were coded as having that particular problem. Here we present detailed analyses of four selected problems: the inability to reach orgasm and lubrication difficulties for women; early ejaculation and erectile difficulties among men.

Women's inability to reach orgasm

Table 2 presents logistic-regression results for factors associated with the likelihood of reporting an inability to reach orgasm among women. Age does not appear to be systematically associated with this problem, although several regions show some positive associations. Poor health tends to increase the likelihood of orgasm difficulties, but is only statistically significant in the non-European West (OR = 1.6) and East Asian (OR = 1.5) populations. In contrast, thinking about sex is associated with a decreased likelihood of this problem.

Most other factors, including physical inactivity, vascular diseases, having had a hysterectomy, smoking, and beliefs about aging and sexual energy show inconsistent associations. Financial problems and depression consistently show positive associations, however, few of the odds ratios reach statistical significance. Relationship characteristics such as partnership status, the frequency of sex, and foreplay are generally nonsignificant, although women who have low expectations about the future viability of their relationship(s) are consistently more likely to report this problem.

Women's lubrication difficulties

Table 3 presents logistic-regression results for factors associated with the likelihood of reporting lubrication difficulties. Increasing age shows a curvilinear association with the likelihood of reporting this problem in all the world regions except for Southeast Asia and South America. Women aged 50–59 y in comparison with those aged 40–49 y are

Table 1a Prevalence of women's sexual problems by region and severity

	Lack of sexual interest	*Inability to reach orgasm*	*Orgasm too quickly*	*Pain during sex*	*Sex not pleasurable*	*Lubrication difficulties*
Northern Europe[a]	25.6 (23.4,27.8)	17.7 (15.7,19.6)	7.7 (6.3,9.1)	9.0(7.5,10.4)	17.1 (15.2,19.1)	18.4 (16.5,20.4)
Occasionally	8.9 (7.4,10.3)	7.3 (5.9,8.6)	3.8 (2.8,4.7)	3.5 (2.6,4.4)	7.4 (6.1,8.7)	5.8 (4.6,7.0)
Periodically	11.4 (9.7,13.0)	6.9 (5.6,8.2)	3.0 (2.1,3.9)	3.5 (2.5,4.5)	7.1 (5.7,8.5)	6.8 (5.6,8.1)
Frequently	5.4 (4.2,6.5)	3.5 (2.5,4.5)	0.9 (0.5,1.3)	2.0 (1.3,2.7)	2.6 (1.8,3.4)	5.8 (4.6,7.0)
Southern Europe[b]	29.6 (27.3,31.9)	24.2 (22.0,26.4)	11.5 (9.9,13.0)	11.9 (10.3,13.4)	22.1 (20.0,24.2)	16.1 (14.2,17.9)
Occasionally	8.7 (7.4,10.0)	7.4 (6.1,8.6)	4.3 (3.3,5.4)	3.4 (2.6,4.2)	6.9 (5.7,8.1)	3.9 (3.0,4.8)
Periodically	13.1 (11.4,14.8)	11.1 (9.5,12.7)	5.5 (4.4,6.7)	5.4 (4.3,6.5)	11.2 (9.6,12.8)	7.5 (6.1,8.8)
Frequently	7.9 (6.4,9.3)	5.7 (4.5,6.9)	1.6 (1.0,2.2)	3.1 (2.2,4.0)	3.9 (2.9,5.0)	4.7 (3.6,5.8)
Non-European West[c]	32.9 (30.5,35.4)	25.2 (22.9,27.5)	10.5 (9.1,12.0)	14.0 (12.3,15.8)	21.5 (19.3,23.7)	27.1 (24.8,29.4)
Occasionally	13.4 (11.6,15.2)	9.5 (7.9,11.1)	4.4 (3.5,5.4)	5.9 (4.7,7.2)	9.0 (7.7,11.0)	8.4 (7.0,9.8)
Periodically	12.6 (10.9,14.3)	10.4 (8.8,12.0)	4.8 (3.7,5.8)	5.3 (4.2,6.4)	8.5 (7.1,10.0)	10.9 (9.2,12.6)
Frequently	7.0 (5.7,8.2)	5.3 (4.2,6.4)	1.4 (0.8,1.9)	2.8 (2.0,3.6)	3.7 (2.7,4.6)	7.8 (6.4,9.3)
Central/South America[d]	28.1 (24.1,32.2)	22.4 (18.7,26.1)	18.3 (14.9,21.8)	16.6 (13.4,19.8)	19.5 (16.1,22.9)	22.5 (18.8,26.3)
Occasionally	7.8 (5.4,10.5)	6.7 (4.5,8.9)	5.0 (3.1,6.8)	2.6 (1.4,3.9)	5.6 (3.5,7.7)	4.3 (2.4,6.2)
Periodically	12.8 (9.8,15.8)	12.1 (9.2,14.9)	9.6 (6.8,12.3)	8.4 (6.1,10.6)	8.8 (6.5,11.1)	11.7 (8.9,14.5)
Frequently	7.4 (5.0,9.8)	3.7 (2.0,5.3)	3.8 (2.3,5.4)	5.6 (3.4,7.9)	5.2 (3.3,7.0)	6.5 (4.3,8.7)
Middle East[e]	43.4 (38.6,48.3)	23.0 (18.4,27.7)	10.0 (6.9,13.1)	21.0 (16.2,25.8)	31.0 (26.1,36.0)	23.0 (18.1,27.8)
Occasionally	14.3 (11.0,17.6)	6.1 (4.7,7.6)	3.8 (2.7,5.0)	6.6 (5.1,8.1)	9.2 (6.1,12.3)	10.7 (6.8,14.6)
Periodically	18.3 (13.7,22.8)	10.9 (7.7,14.0)	5.2 (2.3,8.0)	9.0 (5.2,12.8)	13.6 (10.4,16.9)	7.0 (5.4,8.5)
Frequently	10.9 (6.6,15.2)	6.0 (2.4,9.7)	1.0 (0.5,1.6)	5.4 (1.7,9.0)	8.2 (4.4,12.0)	5.3 (1.7,9.0)
East Asia[f]	34.8 (32.0,37.7)	32.3 (29.5,35.1)	17.6 (15.2,20.0)	31.6 (28.8,34.4)	29.7 (26.9,32.4)	37.9 (35.0,40.7)
Occasionally	7.4 (5.8,9.0)	9.0 (7.4,10.7)	6.2 (4.7,7.7)	11.2 (9.3,13.0)	8.6 (6.9,10.2)	10.1 (8.4,11.8)
Periodically	13.8 (11.8,15.9)	11.9 (10.0,13.9)	7.0 (5.4,8.6)	11.8 (9.8,13.9)	10.4 (8.6,12.1)	15.6 (13.4,17.9)
Frequently	13.6 (11.4,15.9)	11.3 (9.3,13.3)	4.3 (3.0,5.6)	8.6 (6.7,10.5)	10.7 (8.7,12.8)	12.1 (9.9,14.3)
Southeast Asia[g]	43.3 (38.1,48.6)	41.2 (36.0,46.4)	26.3 (21.4,31.2)	29.2 (24.1,34.3)	35.9 (31.0,40.7)	34.2 (28.9,39.5)
Occasionally	9.5 (5.6,13.4)	7.3 (4.4,10.3)	6.6 (3.0,10.3)	6.7 (3.3,10.1)	8.2 (4.7,11.7)	6.5 (3.6,9.4)
Periodically	23.7 (19.1,28.4)	26.8 (21.7,31.9)	17.7 (13.3,22.1)	19.8 (14.9,24.6)	22.9 (18.2,27.7)	20.7 (16.1,25.2)
Frequently	10.1 (6.3,13.9)	7.1 (4.1,10.2)	2.0 (0.0,4.3)	2.7 (1.3,4.1)	4.7 (2.8,6.7)	7.1 (3.6,10.6)

Based on reports from sexually active respondents. 95% CI in parentheses. Percentage in the first row of each region panel indicates the regional average of sexual dysfunction, defined as an experience of dysfunction for a period of 2 months or more. The difference between the regional average and the sum of the three levels of severity of sexual dysfunction indicates the proportion who failed to specify the level of severity. All prevalences are adjusted according to the age distribution of the total of sexually active women in the GSSAB survey.

[a]Includes Austria, Belgium, Germany, Sweden, and the UK ($n=1741$).

[b]Includes France, Israel, Italy, and Spain ($n=1753$).

[c]Includes Australia, Canada, New Zealand, South Africa, and the US ($n=1845$).

[d]Includes Brazil and Mexico ($n=588$).

[e]Includes Algeria, Egypt, Morocco, and Turkey ($n=967$).

[f]Includes China, Hong Kong, Japan, Korea, and Taiwan ($n=1417$).

[g]Includes Indonesia, Malaysia, Philippines, Singapore, and Thailand ($n=689$).

Table 1b Prevalence of men's sexual problems by region and severity

	Lack of sexual interest	*Inability to reach orgasm*	*Early ejaculation*	*Pain during sex*	*Sex not pleasurable*	*Erectile difficulties*
Northern Europe[a]	12.5 (11.1,13.9)	9.1 (7.9,10.4)	20.7 (19.0,22.5)	2.9 (2.2,3.6)	7.7 (6.5,8.8)	13.3 (11.8,14.7)
Occasionally	5.6 (4.6,6.6)	3.9 (3.1,4.8)	10.3 (9.0,11.6)	1.4 (0.9,1.9)	3.2 (2.5,4.0)	5.1 (4.1,6.0)
Periodically	4.4 (3.5,5.3)	3.6 (2.8,4.5)	7.3 (6.2,8.4)	1.2 (0.7,1.6)	2.6 (1.9,3.3)	5.5 (4.5,6.5)
Frequently	2.5 (1.9,3.2)	1.6 (1.0,2.1)	3.2 (2.5,4.0)	0.3 (0.1,0.6)	1.8 (1.2,2.4)	2.7 (2.0,3.4)
Southern Europe[b]	13.0 (11.6,14.5)	12.2 (10.8,13.6)	21.5 (19.8,23.3)	4.4 (3.6,5.3)	9.1 (7.9,10.3)	12.9 (11.5,14.3)
Occasionally	6.6 (5.6,7.7)	5.4 (4.4,6.3)	8.3 (7.1,9.4)	2.0 (1.4,2.6)	4.0 (3.2,4.8)	4.9 (3.9,5.8)
Periodically	5.1 (4.1,6.0)	5.2 (4.2,6.1)	10.1 (8.8,11.4)	1.8 (1.3,2.4)	3.7 (2.9,4.5)	6.1 (5.1,7.1)
Frequently	1.3 (0.9,1.8)	1.6 (1.1,2.2)	3.2 (2.4,3.9)	0.5 (0.2,0.8)	1.4 (0.9,1.9)	1.9 (1.3,2.5)
Non-European West[c]	17.6 (15.9,19.2)	14.5 (13.0,16.1)	27.4 (25.4,29.3)	3.6 (2.8,4.4)	12.1 (10.7,13.5)	20.6 (18.8,22.4)
Occasionally	8.0 (6.8,9.1)	6.4 (5.3,7.5)	11.6 (10.3,13.0)	1.9 (1.3,2.5)	5.8 (4.8,6.8)	9.4 (8.1,10.7)
Periodically	6.8 (5.8,7.9)	5.4 (4.4,6.4)	11.0 (9.7,12.4)	1.0 (0.6,1.4)	3.8 (3.0,4.6)	6.7 (5.5,7.8)
Frequently	2.7 (2.0,3.5)	2.7 (2.0,3.5)	4.7 (3.8,5.6)	0.7 (0.3,1.1)	2.5 (1.8,3.2)	4.5 (3.6,5.5)
Central/South America[d]	12.6 (9.9,15.2)	13.6 (10.9,16.3)	28.3 (24.8,31.8)	4.7 (3.0,6.3)	9.0 (6.7,11.2)	13.7 (11.0,16.4)
Occasionally	3.7 (2.2,5.2)	5.1 (3.3,6.8)	6.4 (4.5,8.3)	1.2 (0.4,2.1)	4.5 (2.9,6.1)	5.0 (3.3,6.7)
Periodically	6.9 (4.9,8.9)	6.7 (4.7,8.7)	13.6 (10.9,16.3)	2.3 (1.1,3.5)	3.0 (1.7,4.3)	6.3 (4.3,8.2)
Frequently	2.0 (0.9,3.1)	1.9 (0.8,3.0)	8.3 (6.1,10.4)	1.1 (0.3,1.9)	1.5 (0.5,2.5)	2.4 (1.2,3.7)
Middle East[e]	21.6 (19.1,24.0)	13.2 (11.1,15.3)	12.4 (10.5,14.2)	10.2 (8.3,12.0)	14.3 (12.1,16.4)	14.1 (11.9,16.2)
Occasionally	8.8 (7.1,10.4)	5.6 (4.2,7.0)	3.8 (2.8,4.8)	3.1 (2.0,4.2)	6.1 (4.7,7.5)	5.7 (4.2,7.2)
Periodically	9.7 (7.8,11.6)	6.4 (4.8,8.0)	6.1 (4.7,7.5)	6.1 (4.6,7.5)	7.2 (5.6,8.8)	7.4 (5.6,9.1)
Frequently	3.1 (1.8,4.3)	1.1(0.4,1.9)	2.5 (1.6,3.3)	1.3 (0.3,1.7)	1.0 (0.3,1.7)	1.0 (0.3,1.7)
East Asia[f]	19.6 (17.7,21.5)	17.2 (15.4,18.9)	29.1 (26.9,31.2)	5.8 (4.7,7.0)	12.2 (10.7,13.8)	27.1 (25.1,29.2)
Occasionally	7.4 (6.2,8.7)	6.6 (5.4,7.8)	9.6 (8.2,11.1)	3.0 (2.1,3.8)	5.2 (4.1,6.2)	11.9 (10.3,13.4)
Periodically	9.1 (7.8,10.5)	7.7 (6.4,9.0)	13.8 (12.2,15.5)	2.0 (1.3,2.6)	5.0 (4.0,6.1)	10.8 (9.3,12.3)
Frequently	3.0 (2.2,3.9)	2.8 (2.0,3.7)	5.6 (4.5,6.7)	0.9 (0.4,1.4)	2.0 (1.3,2.7)	4.5 (3.4,5.5)
Southeast Asia[g]	28.0 (24.5,31.5)	21.1 (17.8,24.4)	30.5 (27.0,34.1)	12.0 (9.4,14.7)	17.4 (14.3,20.4)	28.1 (24.6,31.6)
Occasionally	7.7 (5.3,10.1)	5.7 (3.8,7.7)	5.3 (3.7,6.9)	4.0 (2.4,5.7)	5.0 (3.3,6.8)	6.3 (4.3,8.4)
Periodically	17.4 (14.5,20.2)	13.3 (10.4,16.1)	19.8 (16.6,23.1)	7.2 (5.0,9.4)	10.4 (7.9,12.9)	16.6 (13.5,19.7)
Frequently	2.9 (1.4,4.5)	2.1 (0.7,3.5)	5.4 (3.2,7.5)	0.8 (0.2,1.4)	2.0 (0.8,3.1)	5.2 (3.4,7.0)

Based on reports from sexually active respondents. 95% CI in parentheses. Percentage in the first row of each region panel indicates the regional average of sexual dysfunction, defined as an experience of dysfunction for a period of 2 months or more. The difference between the regional average and the sum of the three levels of severity of sexual dysfunction indicates the proportion who failed to specify the level of severity. All prevalences are adjusted according to the age distribution of the total of sexually active men in the GSSAB survey.

[a]Includes Austria, Belgium, Germany, Sweden, and the UK ($n = 2151$).

[b]Includes France, Israel, Italy, and Spain ($n = 2160$).

[c]Includes Australia, Canada, New Zealand, South Africa, and the US ($n = 2205$).

[d]Includes Brazil and Mexico ($n = 639$).

[e]Includes Algeria, Egypt, Morocco, and Turkey ($n = 1349$).

[f]Includes China, Hong Kong, Japan, Korea, and Taiwan ($n = 1731$).

[g]Includes Indonesia, Malaysia, Philippines, Singapore, and Thailand ($n = 970$).

Table 2 Factors associated with women's inability to reach orgasm by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49	Referent	Referent	Referent	Referent	Referent	Referent	Referent
50–59	1.4 (0.7,2.5)	1.3 (0.8,2.3)	1.6* (1.1,2.4)	0.7 (0.4,1.3)	2.7* (1.5,5.0)	1.1 (0.8,1.7)	1.4 (0.5,3.4)
60–69	2.2* (1.1,4.4)	1.0 (0.5,1.9)	1.1 (0.7,1.9)	1.3 (0.6,2.9)	2.8* (1.4,5.7)	1.1 (0.7,1.8)	3.1† (0.9,10.7)
70–80	2.2 (0.8,6.3)	1.2 (0.5,2.8)	1.0 (0.4,2.5)	0.3† (0.1,1.2)	3.9 (0.8,20.3)	0.8 (0.4,1.7)	n.a.
Fair/Poor overall health (*vs* good)	1 (0.6,1.8)	1.3 (0.8,2.1)	1.6* (1.0,2.6)	0.9 (0.5,1.6)	1.4 (0.7,2.6)	1.5* (1.1,2.1)	2.0† (0.9,4.3)
Level of physical activity							
Average and above	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Lower than average	1.9* (1.1,3.4)	0.6 (0.3,1.4)	1.2 (0.7,1.8)	0.4* (0.1,1.0)	1.8 (0.8,3.8)	0.9 (0.6,1.4)	2.2* (1.0,4.6)
Vascular diseases	0.7 (0.4,1.3)	1.6* (1.0,2.6)	1.0 (0.7,1.5)	1.7† (1.0,3.0)	0.8 (0.4,1.3)	1.1 (0.8,1.6)	1.0 (0.3,2.9)
Hysterectomy	1.2 (0.6,2.3)	1.0 (0.5,2.2)	0.8 (0.5,1.2)	0.8 (0.4,1.5)	1.1 (0.5,2.6)	1.0 (0.6,1.9)	0.4* (0.2,1.0)
Smoking							
Never	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Smoked before	1.1 (0.6,1.9)	1.4 (0.7,2.8)	1.3 (0.8,1.9)	1.1 (0.6,2.1)	1.7 (0.8,3.5)	0.6 (0.3,1.2)	1.7 (0.3,9.4)
Currently smoking	0.8 (0.4,1.6)	0.9 (0.5,1.6)	1.9* (1.2,3.0)	1.1 (0.5,2.0)	2.0* (1.1,3.6)	1.0 (0.6,1.8)	0.6 (0.2,2.1)
Thinking of sex							
Never or <1/month	Referent	Referent	Referent	Referent	Referent	Referent	Referent
A few times/month	1.2 (0.4,3.3)	0.8 (0.5,1.4)	0.7 (0.4,1.2)	0.8 (0.4,1.6)	0.6 (0.3,1.1)	0.6* (0.4,0.9)	0.6 (0.2,1.5)
A few times/week	0.9 (0.2,4.0)	0.9 (0.3,2.9)	0.4* (0.2,0.8)	0.5 (0.1,1.8)	0.6 (0.2,2.4)	n.a.	0.2 (0.0,4.1)
Belief that aging reduces sex energy	1.4 (0.8,2.4)	1.3 (0.8,2.0)	1.6* (1.0,2.4)	0.9 (0.5,1.5)	0.8 (0.5,1.4)	1.3† (1.0,1.8)	0.6 (0.3,1.5)
Education							
At least some college	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Secondary/high school	0.5* (0.3,1.0)	0.8 (0.4,1.7)	0.8 (0.6,1.2)	1.6 (0.7,3.6)	1.1 (0.5,2.2)	1.3 (0.9,2.0)	0.7 (0.3,1.8)
Primary school or less	1.4 (0.7,2.8)	1.1 (0.5,2.4)	0.8 (0.3,2.3)	1.8 (0.8,3.9)	1.7 (0.6,2.7)	1.2 (0.7,2.2)	0.3* (0.1,0.9)
Belief in religion guiding sex	2.3* (1.2,4.2)	1.1 (0.7,1.8)	1.2 (0.8,1.7)	1.6 (0.9,2.7)	1.0 (0.6,1.8)	1.2 (0.7,2.1)	1.9 (0.8,4.4)
Divorce in past 3 y	0.3 (0.0,2.1)	1.6 (0.4,6.1)	0.5 (0.2,1.3)	1.4 (0.2,13.0)	1.7 (0.6,5.2)	0.7 (0.1,3.7)	1.2 (0.3,4.9)
Financial problems in last 3 y	1.2 (0.5,2.6)	1.5 (0.8,2.8)	1.8* (1.2,2.8)	1.1 (0.6,1.9)	1.1 (0.6,2.0)	0.7 (0.4,1.2)	2.8* (1.2,6.2)
Depression diagnosed	1.6 (0.8,3.4)	1.6* (1.0,2.6)	1.4 (0.9,2.1)	1.7† (1.0,3.1)	1.3 (0.7,2.3)	1.2 (0.6,2.5)	2.7† (0.8,8.7)
Partnership status							
Exclusive and committed	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Exclusive but not committed	1.0 (0.4,2.6)	0.9 (0.3,2.9)	1.4 (0.8,2.4)	0.3† (0.1,1.1)	0.2 (0.0,1.8)	0.4 (0.1,1.6)	0.1* (0.0,0.7)
Non-exclusive	0.5 (0.1,4.1)	0.4 (0.0,2.9)	1.4 (0.3,5.8)	0.4 (0.1,1.8)	0.3† (0.1,1.2)	1.3 (0.6,3.0)	0.6 (0.1,2.7)
Future of the relationship							
High hope	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Worried	1.0 (0.3,3.1)	1.3 (0.5,3.8)	3.7* (2.0,6.7)	2.2† (1.0,5.0)	1.3 (0.5,3.8)	1.7† (1.0,2.8)	1.1 (0.3,3.3)
No future	2.9 (0.8,10.0)	0.7 (0.4,1.4)	2.0 (0.8,4.8)	2.4* (1.0,5.4)	2.9† (0.8,8.7)	2.9* (1.5,5.5)	0.3 (0.1,2.1)
Frequency of sexual relationship							
Several times per week	Referent	Referent	Referent	Referent	Referent	Referent	Referent
2 to 3 times per month	1.3 (0.8,2.3)	0.8 (0.5,1.3)	1.2 (0.8,1.8)	1.0 (0.5,1.7)	1.1 (0.6,1.9)	1.4 (0.8,2.2)	0.8 (0.3,2.1)
Less than monthly	2.3* (1.1,4.8)	1.1 (0.6,2.1)	1.0 (0.6,1.7)	1.1 (0.4,2.8)	1.2 (0.4,3.1)	1.3 (0.7,2.3)	0.8 (0.2,3.0)
Usually does not engage in foreplay	0.9 (0.4,1.9)	0.9 (0.5,1.6)	1.6 (0.9,2.8)	2.1* (1.2,3.8)	0.8 (0.4,1.5)	1.6* (1.1,2.3)	1.3 (0.5,3.8)
χ^2	80.1	40.2	122.3	46.2	78.0	96.4	42.7
d.f.	27	26	28	26	27	27	25
Observations	1043	602	1338	531	749	1159	235

Odds ratios from logistic regression. Based on reports from sexually active women. Country differences in each region controlled.
Northern Europe includes Belgium, Sweden, and Germany.
Southern Europe includes Spain and Israel.
Non-European West includes Australia, Canada, New Zealand, and the US.
Central/South America includes Brazil and Mexico.
Middle East includes Egypt, Morocco, and Turkey.
East Asia includes China, Hong Kong, Korea, and Japan.
Southeast Asia includes Malaysia, and Thailand.
*$P \leq 0.05$; †$P \leq 0.10$.

Table 3 Factors associated with women's lubrication difficulties by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49	Referent	Referent	Referent	Referent	Referent	Referent	Referent
50–59	2.1* (1.2,3.5)	1.9* (1.2,3.1)	1.7* (1.2,2.3)	1.0 (0.5,1.9)	2.6* (1.3,5.0)	2.2* (1.5,3.3)	0.7 (0.4,1.3)
60–69	2.8* (1.6,5.0)	2.8* (1.7,4.7)	1.6* (1.0,2.5)	1.6 (0.7,4.0)	3.2* (1.4,6.9)	3.3* (2.0,5.3)	0.9 (0.4,2.1)
70–80	1.7 (0.6,4.7)	2.0† (0.9,4.6)	1.2 (0.6,2.5)	0.6 (0.1,2.8)	4.6† (0.9,23.4)	3.0* (1.4,6.5)	n.a.
Poor overall health (*vs* good)	1.6* (1.0,2.6)	1.3 (0.9,2.0)	1.3 (0.9,1.9)	0.7 (0.3,1.2)	1.7† (0.9,3.2)	1.5* (1.1,2.0)	1.4 (0.8,2.5)
Level of physical activity							
Average and above	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Lower than average	0.8 (0.5,1.4)	1.0 (0.6,1.6)	1.0 (0.7,1.5)	0.9 (0.4,2.1)	1.7 (0.9,3.6)	1.1 (0.7,1.7)	2.0* (1.2,3.3)
Vascular diseases	1.0 (0.6,1.4)	0.7† (0.5,1.1)	1.1 (0.8,1.4)	1.0 (0.6,1.8)	0.5* (0.3,0.9)	0.9 (0.6,1.3)	0.9 (0.5,1.7)
Hysterectomy	1.3 (0.8,2.1)	0.5* (0.3,0.8)	0.7* (0.5,1.0)	1.1 (0.5,2.1)	0.8 (0.3,2.1)	1.2 (0.6,2.2)	0.8 (0.3,1.9)
Smoking							
Never	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Smoked before	1.5 (0.9,2.4)	1.4 (0.8,2.3)	0.9 (0.6,1.3)	1.0 (0.5,1.9)	2.5* (1.1,5.5)	0.6 (0.3,1.2)	1.2 (0.4,3.8)
Currently smoking	1.1 (0.7,1.8)	1.0 (0.6,1.5)	1.1 (0.8,1.7)	0.6 (0.3,1.4)	1.5 (0.7,3.1)	1.3 (0.7,2.4)	1.3 (0.6,3.0)
Thinking of sex							
Never or <1/month	Referent	Referent	Referent	Referent	Referent	Referent	Referent
A few times/month	0.4* (0.2,0.7)	0.7† (0.4,1.1)	0.5* (0.3,0.8)	1.2 (0.5,2.9)	0.7 (0.4,1.4)	0.9 (0.6,1.3)	0.8 (0.4,1.4)
A few times/week	0.6 (0.3,1.2)	0.9 (0.3,2.4)	0.4* (0.2,0.8)	0.5 (0.1,1.9)	0.7 (0.2,2.8)	0.7 (0.1,4.7)	0.5 (0.1,2.2)
Belief that aging reduces sex energy	1.2 (0.8,1.8)	1.6* (1.1,2.3)	1.2 (0.9,1.8)	1.1 (0.6,1.9)	1.0 (0.6,1.8)	1.4* (1.0,2.0)	1.3 (0.8,2.1)
Education							
At least some college	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Secondary/high school	0.6† (0.4,1.0)	0.8 (0.5,1.4)	0.7* (0.5,1.0)	1.1 (0.5,2.3)	0.6 (0.2,1.5)	1.0 (0.7,1.6)	0.7 (0.4,1.1)
Primary school or less	0.4* (0.2,0.9)	1.2 (0.7,2.1)	0.7 (0.3,1.5)	0.8 (0.4,1.7)	0.5† (0.3,1.1)	1.0 (0.6,1.8)	0.5* (0.2,1.0)
Belief in religion guiding sex	1.2 (0.7,1.9)	0.6* (0.4,0.9)	1.3† (1.0,1.8)	1.6 (0.9,2.9)	1.4 (0.8,2.7)	1.7* (1.0,2.9)	1.7† (0.9,2.9)
Divorce in past 3 y	n.a.	2.2 (0.6,8.0)	0.5 (0.2,1.2)	n.a.	n.a.	1.2 (0.2,6.8)	2.1 (0.7,6.2)
Financial problems in last 3 y	0.4† (0.1,1.0)	1.0 (0.6,1.7)	0.9 (0.6,1.3)	1.1 (0.6,2.0)	1.4 (0.6,3.0)	1.2 (0.8,2.0)	2.0* (1.2,3.5)
Depression diagnosed	1.4 (0.8,2.6)	1.8* (1.2,2.6)	1.8* (1.2,2.6)	1.8† (1.0,3.4)	1.6 (0.8,3.3)	1.2 (0.5,2.7)	1.6 (0.7,3.6)
Partnership status							
Exclusive and committed	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Exclusive but not committed	1.0 (0.5,2.1)	0.9 (0.4,2.0)	1.1 (0.7,1.7)	0.3† (0.1,1.0)	0.7 (0.1,4.0)	0.3 (0.1,1.4)	0.9 (0.2,4.0)
Nonexclusive	0.3 (0.0,2.3)	0.4 (0.1,1.6)	0.9 (0.3,2.8)	0.4 (0.1,1.8)	2.0 (0.5,8.6)	1.0 (0.4,2.5)	1.1 (0.4,3.1)
Future of the relationship							
High hope	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Worried	2.6* (1.0,6.8)	1.0 (0.4,2.6)	2.3* (1.4,3.8)	1.9 (0.8,4.4)	1.2 (0.4,3.5)	1.0 (0.5,1.8)	1.0 (0.4,2.7)
No future	0.6 (0.2,2.5)	1.2 (0.6,2.4)	1.2 (0.5,3.1)	1.7 (0.6,4.8)	1.0 (0.2,4.9)	1.6 (0.8,3.1)	0.4 (0.1,3.1)
Frequency of sexual relationship							
Several times per week	Referent	Referent	Referent	Referent	Referent	Referent	Referent
2 to 3 times per month	1.2 (0.8,1.9)	1.5† (1.0,2.2)	1.3 (0.9,1.7)	1.6 (0.9,2.9)	1.0 (0.5,1.9)	1.0 (0.6,1.6)	0.9 (0.5,1.6)
Less than monthly	1.4 (0.7,2.9)	1.2 (0.7,2.1)	1.2 (0.7,1.9)	1.3 (0.4,4.1)	1.6 (0.7,3.8)	1.2 (0.7,2.1)	0.7 (0.3,1.5)
Usually does not engage in foreplay	1.1 (0.6,2.0)	1.1 (0.7,1.7)	0.8 (0.5,1.3)	1.1 (0.5,2.1)	1.1 (0.6,2.0)	1.4* (1.0,2.1)	0.9 (0.5,1.7)
χ^2	66.4	79.1	125.9	26.7	53.9	116.2	39.9
d.f.	27	27	29	24	26	28	27
Observations	1053	1477	1557	374	694	1167	548

Odds ratios from logistic regression. Based on reports from sexually active women. Country differences in each region controlled.
Northern Europe includes Belgium, Sweden, and Germany.
Southern Europe includes Spain and Israel.
Non-European West includes Australia, Canada, New Zealand, and the US.
Central/South America includes Brazil and Mexico.
Middle East includes Egypt, Morocco, and Turkey.
East Asia includes China, Hong Kong, Korea, and Japan.
Southeast Asia includes Malaysia, and Thailand.
*$P \leq 0.05$; †$P \leq 0.10$.

roughly twice as likely to report lubrication difficulties across several regions, including Northern Europe (OR = 2.1), Southern Europe (OR = 1.9), the non-European West (OR = 1.7), East Asia (OR = 2.2), and the Middle East (OR = 2.6). However, their counterparts, who are 70–80 y old, are no more likely to report this problem than the youngest cohort in most regions of the world.

Most physical status factors are not associated with lubrication difficulties, but having had a hysterectomy is consistently associated with a lower likelihood of this problem. With the exception of Southern Europe, belief in religion guiding sex is associated with consistently raised odds ratios, although statistical significance is seen only in East Asia.

Women with lower educational attainment are less likely to report problems with lubrication in several world regions. Also, women who have been diagnosed with depression in the past are greater than one and one-half times more likely to report this problem in Southern European (OR = 1.8), non-European Western (OR = 1.8), Central/South American (OR = 1.8), Middle Eastern (OR = 1.6), and Southeast Asian (OR = 1.6) country clusters.

Men's early ejaculation

Table 4 presents logistic-regression results for factors associated with the likelihood of reporting early ejaculation. Vascular diseases initially seemed to be correlated with an increased probability of reporting early ejaculation; however, it appears that this association was confounded by ED, likely due to confusion about the two conditions in the respondents. After controlling for ED, early ejaculation was correlated with vascular diseases only in the Middle East.

In general, education is negatively associated with this problem; men without a college education are twice as likely to report this problem in Central/South America (OR = 2.3–2.6) and the Middle East (OR = 2.2–2.3). Experience with financial problems elevates the likelihood of reporting early ejaculation, but this is statistically significant only in the Middle East (OR = 1.8). Infrequent sex tends to be associated with the likelihood of this problem. Overall, these models had the least explanatory power in this study.

Men's erectile difficulties

Table 5 presents logistic-regression results for factors associated with the likelihood of reporting erectile difficulties. Aging effects are quite strong across most regions with respect to erectile difficulties. In all regions, except Central/South America and Southeast Asia, men aged 60–80 y are significantly more likely to report erectile difficulties than those aged 40–49 y (OR from 2.7 to 6.9). Physical factors, such as a history of vascular conditions and prostate disease, are also relevant. Having had a vascular condition increases the likelihood of erectile difficulties in almost all world regions, with ORs ranging from 1.4 to 4.4. Prostate disease consistently increases the likelihood of erectile difficulties in all world regions as well, but is only statistically significant in Northern Europe (OR = 1.8) and Southern Europe (OR = 2.0).

Regarding the remaining factors, financial problems elevate the likelihood of erectile difficulties in several world regions, including Northern Europe (OR = 2.3), Southeast Asia (OR = 2.2), and the Middle East (OR = 3.1). Moreover, men with a history of depression are also more likely to report problems with erections, although these findings are statistically significant only in Southern Europe (OR = 1.9) and the non-European West (OR = 1.9). Finally, several relationship characteristics are relevant as well. Men in uncommitted relationships tend to experience these problems more, and erectile difficulties appear to be highly associated with infrequent sex.

Other sexual problems

We also examined several additional sexual problems using logistic regression, including a lack of interest in sex (Table 6), pain during sex (Table 7), and non-pleasurable sex (Table 8) among women and a lack of interest in sex (Table 9), the inability to orgasm (Table 10), and nonpleasurable sex (Table 11) among men.

For women, a lack of interest in sex is associated with the belief that aging reduces sexual desire and activity (OR from 1.2 to 1.8), thinking about sex infrequently (thinking about sex more frequently is associated with OR from 0.3 to 1.0), depression (OR from 1.3 to 2.2), low expectations about the future of the relationship (lower expectations are associated with OR from 1.2 to 3.1 in all regions except Southeast Asia (OR = 0.5)), and infrequent sex (less frequent sex is associated OR from 1.0 to 3.1, within all regions except East Asia (OR = 0.9)) (Table 6).

Factors associated with pain during sex among women include younger age (the effect shows considerable variability between regions), poor health (OR from 1.0 to 2.1), infrequent sex (OR from 1.0 to 2.6), and low expectations about the future of the relationship (there is some variability between regions, however, lower expectations were usually associated with increasing likelihood of the problem (Table 7)).

With respect to nonpleasurable sex among women, thinking about sex infrequently (with thinking

Table 4 Factors associated with men's early ejaculation by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49	Referent	Referent	Referent	Referent	Referent	Referent	Referent
50–59	0.8 (0.5,1.1)	1.4 (0.9,2.1)	0.7† (0.5,1.0)	0.5† (0.3,1.1)	0.9 (0.5,1.5)	1.2 (0.8,1.8)	0.7 (0.3,1.5)
60–69	0.7 (0.5,1.1)	1.7* (1.1,2.7)	0.9 (0.6,1.4)	0.8 (0.4,1.8)	1.0 (0.5,2.0)	0.9 (0.5,1.6)	0.5 (0.2,1.4)
70–80	0.5† (0.3,1.1)	1.4 (0.8,2.5)	0.6† (0.3,1.1)	0.5 (0.1,1.4)	0.5 (0.1,2.1)	0.9 (0.4,1.8)	0.7 (0.1,9.4)
Poor overall health (*vs* good)	1.0 (0.7,1.5)	1.3 (0.9,1.7)	1.6* (1.1,2.3)	1.0 (0.6,1.9)	0.9 (0.5,1.6)	1.2 (0.8,1.8)	0.5 (0.2,1.4)
Level of physical activity							
Average and above	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Lower than average	0.8 (0.5,1.2)	0.9 (0.6,1.4)	0.7 (0.4,1.2)	1.3 (0.6,3.3)	0.6 (0.2,1.8)	0.9 (0.5,1.7)	0.9 (0.4,1.8)
Vascular diseases	1.2 (0.8,1.6)	1.1 (0.8,1.5)	0.9 (0.6,1.2)	1.2 (0.7,2.2)	2.0* (1.2,3.3)	1.3 (0.9,2.0)	1.4 (0.7,2.9)
Erectile difficulties	6.0* (3.8,9.4)	4.1* (2.6,6.3)	4.4* (2.8,6.7)	11.9* (4.9,28.6)	3.7* (1.6,8.8)	6.9* (4.3,10.9)	5.7* (2.5,13.2)
Prostate disease	0.6 (0.3,1.5)	1.7† (1.0,3.0)	0.8 (0.4,1.6)	1.34 (0.5,3.6)	0.4 (0.1,1.5)	1.7 (0.9,3.1)	2.4 (0.5,11.3)
Smoking							
Never	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Smoked before	0.9 (0.6,1.3)	1.0 (0.7,1.5)	1.1 (0.8,1.5)	0.9 (0.5,1.6)	0.8 (0.4,1.6)	1.8* (1.0,3.0)	0.9 (0.3,2.7)
Currently smoking	1.0 (0.7,1.5)	1.2 (0.8,1.7)	1.1 (0.7,1.5)	0.8 (0.4,1.7)	0.7† (0.4,1.4)	1.5† (0.9,2.5)	0.9 (0.4,2.1)
Thinking of sex							
Never or <1/month	Referent	Referent	Referent	Referent	Referent	Referent	Referent
A few times/month	1.0 (0.3,2.8)	1.0 (0.5,1.8)	1.1 (0.5,2.4)	1.1 (0.3,4.5)	0.5 (0.2,1.4)	1.1 (0.6,2.0)	0.7 (0.3,2.2)
A few times/week	0.9 (0.3,2.6)	0.7 (0.3,1.4)	1.3 (0.6,2.8)	0.6 (0.1,2.8)	0.6 (0.2,1.7)	2.2 (0.8,6.4)	2.0 (0.4,10.2)
Belief that aging reduces sex energy	1.2 (0.9,1.7)	1.2 (0.9,1.6)	1.1 (0.7,1.6)	0.9 (0.6,1.5)	0.8 (0.5,1.3)	1.1 (0.8,1.6)	0.7 (0.4,1.4)
Education							
At least some college	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Secondary/high school	1.4 (0.9,2.1)	1.2 (0.8,1.8)	1.2 (0.9,1.6)	2.6* (1.1,6.2)	2.2* (1.1,4.1)	0.9 (0.6,1.4)	1.6 (0.7,3.6)
Primary school or less	1.0 (0.6,1.8)	1.6 (1.0,2.4)	1.0 (0.6,1.7)	2.3† (0.9,5.6)	2.3* (1.3,4.3)	1.2 (0.6,2.2)	0.8 (0.3,2.6)
Belief in religion guiding sex	1.1 (0.7,1.7)	0.9 (0.7,1.3)	1.3 (0.9,1.7)	1.3 (0.7,2.3)	1.1 (0.7,1.8)	2.0 (0.9,4.2)	1.7 (0.7,3.8)
Divorce in past 3 y	1.2 (0.5,3.1)	0.6 (0.2,1.7)	1.7 (0.9,3.3)	4.9* (1.1,21.6)	0.7 (0.2,2.5)	0.5 (0.1,2.1)	1.7 (0.4,7.3)
Financial problems in last 3 y	1.2 (0.7,2.2)	1.5† (0.9,2.3)	1.2 (0.8,1.7)	1.4 (0.8,2.5)	1.8* (1.1,3.1)	1.1 (0.7,1.9)	2.0† (0.9,4.5)
Depression diagnosed	1.0 (0.6,1.9)	1.1 (0.7,1.7)	0.8 (0.5,1.3)	2.9* (1.2,7.2)	2.0 (0.8,4.6)	0.4 (0.1,1.9)	1.6 (0.6,4.7)
Partnership status							
Exclusive and committed	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Exclusive but not committed	0.9 (0.5,1.6)	0.8 (0.4,1.7)	1.0 (0.6,1.7)	0.9 (0.3,2.4)	n.a.	1.0 (0.2,3.9)	0.2 (0.0,2.7)
Non-exclusive	0.3† (0.1,1.1)	1.0 (0.5,1.8)	1.2 (0.7,2.3)	1.8 (0.8,4.1)	1.9* (1.0,3.4)	1.7† (0.9,3.3)	1.4 (0.5,3.6)
Future of the relationship							
High hope	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Worried	1.5 (0.8,2.7)	1.3 (0.6,2.7)	1.9* (1.1,3.3)	1.7 (0.7,4.4)	0.8 (0.1,8.1)	1.2 (0.5,2.7)	0.4 (0.1,1.5)
No future	0.8 (0.3,2.2)	1.0 (0.6,1.7)	0.7 (0.4,1.5)	0.3* (0.1,1.0)	1.3 (0.3,5.7)	2.2 (0.7,6.5)	n.a.
Frequency of sexual relationship							
Several times per week	Referent	Referent	Referent	Referent	Referent	Referent	Referent
2 to 3 times per month	1.2 (0.9,1.7)	0.9 (0.7,1.2)	1.8* (1.3,2.4)	1.0 (0.5,1.8)	0.4* (0.2,0.8)	1.5 (0.9,2.6)	1.0 (0.5,2.3)
Less than monthly	1.2 (0.9,2.3)	0.8 (0.4,1.4)	2.0* (1.3,3.2)	0.5 (0.1,2.4)	0.4 (0.1,2.0)	2.1* (1.0,4.1)	2.4 (0.8,7.9)
Usually does not engage in foreplay	1.0 (0.5,1.8)	0.9 (0.5,1.4)	1.8* (1.0,3.0)	1.1 (0.5,2.5)	1.4 (0.7,2.7)	0.7 (0.4,1.2)	1.4 (0.5,3.9)
χ^2	107.6	151.4	150.9	70.9	82.7	144.6	62.7
d.f.	30	29	30	27	27	29	26
Observations	1839	1879	1754	530	894	1101	404

Odds ratios from logistic regression—adjusted for presence of erectile difficulties. Based on reports from sexually active men. Country differences in each region controlled.
Northern Europe includes Austria, Belgium, Sweden, the UK, and Germany.
Southern Europe includes France, Israel, Italy, and Spain.
Non-European West includes Australia, Canada, New Zealand, South Africa, and the US.
Central/South America includes Brazil and Mexico.
Middle East includes Algeria, Egypt and Turkey.
East Asia includes China, Hong Kong, Taiwan, and Japan.
Southeast Asia includes Indonesia and Thailand.
*$P \leq 0.05$; †$P \leq 0.10$.

Table 5 Factors associated with men's erectile difficulties by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49	Referent	Referent	Referent	Referent	Referent	Referent	Referent
50–59	2.0† (1.0,4.1)	4.2* (2.1,8.5)	1.5 (0.9,2.4)	0.4* (0.1,1.0)	1.3 (0.4,4.4)	1.9* (1.0,3.7)	1.1 (0.5,2.1)
60–69	3.9* (1.9,8.1)	6.5* (3.2,13.3)	3.7* (2.2,6.3)	0.4† (0.1,1.2)	2.7 (0.7,10.4)	4.3* (2.3,8.3)	1.1 (0.5,2.3)
70–80	2.7* (1.0,7.1)	6.9* (3.1,15.4)	4.7* (2.5,9.0)	0.5 (0.1,2.1)	6.8* (1.4,34.5)	6.6* (3.2,13.6)	1.9 (0.5,6.5)
Poor overall health (*vs* good)	1.4 (0.8,2.4)	1.8* (1.2,2.8)	1.5† (0.9,2.5)	2.0 (0.9,4.5)	0.6 (0.2,1.9)	1.1 (0.7,1.6)	1.8† (1.0,3.5)
Level of physical activity							
Average and above	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Lower than average	1.1† (0.6,1.9)	1.0 (0.6,1.7)	2.1* (1.2,3.6)	0.4 (0.1,1.4)	3.0 (0.8,11.4)	1.6 (0.9,3.0)	1.8 (0.8,3.9)
Vascular diseases	1.6* (1.0,2.7)	2.2* (1.5,3.4)	1.4† (1.0,2.1)	4.1* (1.7,10.1)	4.4* (1.8,10.7)	2.5* (1.6,3.8)	2.0* (1.1,3.6)
Prostate disease	1.8* (0.8,3.7)	2.0* (1.1,3.6)	1.5 (0.8,2.9)	1.9 (0.7,5.6)	2.2 (0.5,9.6)	1.3 (0.7,2.5)	1.8 (0.4,8.9)
Smoking							
Never	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Smoked before	1.2 (0.7,2.2)	0.8 (0.5,1.3)	0.9 (0.6,1.5)	1.0 (0.4,2.7)	0.5 (0.1,1.6)	0.9 (0.5,1.7)	0.7 (0.3,1.8)
Currently smoking	1.1 (0.6,2.0)	1.1 (0.6,1.7)	1.5 (0.9,2.5)	1.4 (0.6,3.4)	0.4† (0.2,1.1)	1.1 (0.7,1.9)	1.0 (0.5,2.0)
Thinking of sex							
Never or <1/month	Referent	Referent	Referent	Referent	Referent	Referent	Referent
A few times/month	3.9 (0.7,20.7)	1.3 (0.6,2.7)	0.6 (0.3,1.4)	0.2* (0.1,0.5)	1.7 (0.3,8.3)	1.1 (0.6,1.9)	1.6 (0.5,4.5)
A few times/week	2.3 (0.4,13.3)	1.3 (0.5,3.2)	0.5 (0.2,1.2)	0.1* (0.0,0.4)	1.2 (0.2,6.5)	2.2 (0.8,6.0)	0.9 (0.2,3.1)
Belief that aging reduces sex energy	0.8 (0.5,1.4)	1.0 (0.7,1.6)	1.2 (0.8,1.9)	0.9 (0.4,2.1)	1.3 (0.6,3.0)	1.1 (0.7,1.7)	1.0 (0.6,1.9)
Education							
At least some college	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Secondary/high school	1.0 (0.5,1.9)	1.1 (0.6,1.7)	1.2 (0.8,1.9)	1.4 (0.5,3.9)	2.0 (0.6,6.6)	1.0 (0.6,1.6)	0.9 (0.5,1.8)
Primary school or less	0.5 (0.2,1.3)	0.8 (0.5,1.4)	1.1 (0.5,2.6)	1.8 (0.7,4.8)	1.0 (0.3,3.0)	1.6 (0.8,2.9)	0.4 (0.1,1.6)
Belief in religion guiding sex	1.2 (0.7,2.2)	0.9 (0.6,1.4)	0.8 (0.5,1.3)	0.9 (0.4,2.1)	1.7 (0.6,4.4)	1.4 (0.5,4.0)	0.9 (0.5,1.9)
Divorce in past 3 y	0.5 (0.1,4.0)	0.5 (0.2,1.4)	0.3* (0.1,1.0)	n.a.	2.0 (0.4,8.9)	2.7 (0.4,17.3)	4.8† (0.8,29.2)
Financial problems in last 3 y	2.3* (1.0,5.0)	1.6 (0.9,2.7)	1.4 (0.8,2.4)	2.0† (0.9,4.2)	3.1* (1.3,7.3)	0.9 (0.5,1.6)	2.2* (1.2,4.1)
Depression diagnosed	1.1 (0.5,2.4)	1.9* (1.1,3.1)	1.9* (1.1,3.3)	2.0 (0.7,5.4)	1.9 (0.4,8.6)	1.5 (0.3,7.4)	0.8 (0.2,2.4)
Partnership status							
Exclusive and committed	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Exclusive but not committed	1.5 (0.6,3.7)	3.1* (1.7,5.8)	2.2* (1.2,3.8)	0.7 (0.1,3.6)	n.a.	0.7 (0.1,7.3)	6.7* (1.1,41.8)
Nonexclusive	1.3 (0.4,4.2)	1.9* (1.0,3.6)	3.1* (1.0,9.1)	0.9 (0.3,3.0)	1.3 (0.4,4.5)	1.3 (0.6,2.8)	1.1 (0.4,2.6)
Future of the relationship							
High hope	Referent	Referent	Referent	Referent	Referent	Referent	Referent
Worried	0.5 (0.1,2.4)	1.0 (0.4,2.2)	1.4 (0.6,3.2)	0.5 (0.1,2.2)	4.3 (0.7,25.1)	1.2 (0.4,3.5)	4.2† (0.8,22.0)
No future	0.8 (0.3,2.4)	0.8 (0.4,1.7)	1.4 (0.6,3.4)	1.1 (0.3,3.8)	4.3 (0.8,23.1)	3.1† (0.9,10.9)	0.7 (0.1,7.4)
Frequency of sexual relationship							
Several times per week	Referent	Referent	Referent	Referent	Referent	Referent	Referent
2 to 3 times per month	2.0* (1.2,3.5)	1.4† (1.0,2.2)	2.3* (1.5,3.6)	1.5 (0.7,3.3)	1.0 (0.3,3.1)	1.0 (0.5,2.1)	1.8† (1.0,3.5)
Less than monthly	5.7* (2.6,12.5)	3.3* (1.8,6.1)	3.2* (1.8,5.6)	3.6* (1.0,13.1)	8.6* (1.5,48.9)	1.8 (0.8,4.1)	2.8* (1.0,7.6)
Usually does not engage in foreplay	0.5† (0.2,1.2)	0.8 (0.5,1.4)	1.7 (0.9,3.3)	1.0 (0.3,3.5)	0.5 (0.1,1.7)	1.0 (0.6,1.6)	0.9 (0.4,2.1)
χ^2	159.5	144.8	163.5	81.6	80.7	124.4	89.5
d.f.	30	28	28	25	25	28	27
Observations	1402	1879	1447	520	705	1101	566

Odds ratios from logistic regression. Based on reports from sexually active men. Country differences in each region controlled.
Northern Europe includes Austria, Belgium, Sweden, and Germany.
Southern Europe includes France, Israel, Italy, and Spain.
Non-European West includes Australia, Canada, New Zealand, and the US.
Central/South America includes Brazil and Mexico.
Middle East includes Egypt and Turkey.
East Asia includes China, Hong Kong, Taiwan, and Japan.
Southeast Asia includes Indonesia, Philippines, and Singapore.
*$P \leq 0.05$; †$P \leq 0.10$.

Table 6 Factors associated with the lack of interest in having sex among women by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49 (referent)							
50–69	1.2	1.3	1.1	0.8	1.2	1.6**	1.6
60–69	1.0	0.9	1.0	1.7	1.5	1.8*	1.1
70–80	1.3	1.3	0.6†	0.8	2.7†	1.3	1.8
Poor overall health (*vs* good)	1.3	1.2	1.2	0.9	1.0	1.6**	2.3**
Level of physical activity							
Average and above (referent)							
Lower than average	1.0	1.1	1.4†	1.3	1.7*	1.1	1.0
Vascular diseases	0.8	0.9	1.1	1.2	1.0	1.0	2.1*
Hysterectomy	1.2	0.8	1.2	0.9	1.1	0.9	0.3*
Smoking							
Never							
Smoked before	1.2	0.9	1.1	1.1	1.2	1.3	1.4
Currently smoking	1.2	0.8	1.2	0.8	1.3	0.8	0.4†
Thinking of sex							
Never or <1/month (referent)							
A few times/month	0.4***	0.8	0.4***	0.7	0.6*	0.3***	1.0
A few times/week	0.3***	0.5	0.3***	0.4†	0.4†	0.7	0.2†
Belief that aging reduces sex energy	1.4*	1.2	1.7***	1.5†	1.2	1.8***	1.3
Education							
College (referent)							
High school	1.0	1.0	0.8†	1.5	1.3	1.2	0.6†
Primary/elementary	1.0	1.4	0.3**	1.4	0.8	1.2	0.4*
Belief in religion guiding sex	1.2	1.0	1.1	1.1	1.1	1.6	3.2*
Divorce in past 3 y	1.1	1.2	0.7	1.2	0.9	0.9	n.a.
Financial problems in last 3 y	1.2	1.2	1.2	1.2	1.7*	1.1	2.0
Depression diagnosed	2.2***	1.7**	1.6**	1.6†	1.5†	1.3	1.3
Partnership status							
Exclusive and committed (referent)							
Exclusive but not committed	0.7	1.0	1.0	0.8	0.9	0.5	n.a
Nonexclusive	1.5	2.0	0.5	0.5	1.0	0.6	1.3
Future of the relationship							
High hope (referent)							
Worried	1.5	1.2	2.3**	2.2*	1.6	1.3	0.5
No future	1.5	1.4	2.8***	2.4*	1.9	3.1***	1.3
Frequency of sexual relationship							
Several times/week (referent)							
<1/week	1.6**	1.4†	1.8***	1.1	1.8**	0.8	1.6
<1/month	1.7*	1.5†	2.3***	1.5	3.1*	0.9	1.0
Usually does not engage in foreplay	1.4	0.9	1.3	1.4	0.9	1.1	1.4
χ^2	121.1	70.8	194.5	49.6	68.8	173.4	78.9
d.f.	28	27	29	26	26	28	24
Observations	1614	1174	1725	599	668	1144	356

Odds ratios from logistic regression. Based on reports from sexually active women. Country differences in each region controlled.
Northern Europe includes Austria, Sweden, UK, and Germany.
Southern Europe includes France, Israel, and Spain.
Non-Europe West includes Australia, Canada, New Zealand, South Africa, and the USA.
Central South America includes Brazil and Mexico.
Middle East includes Algeria and Turkey.
East Asia includes China, Hong Kong, Taiwan, and Japan.
Southeast Asia includes Indonesia and Malaysia.
$^{\dagger}P \leq 0.10$; $*P \leq 0.05$; $**P \leq 0.01$; $***P \leq 0.001$.

of sex never or less than once a month as the referent, sexually active women who thought about sex at least a few times a month had OR from 0.2 to 0.7), the belief that aging reduces sexual energy (OR from 1.3 to 1.7 in all regions except Central South America (OR = 0.9)), depression (OR from 1.0 to 3.9), and low expectations about the future of their relationship (OR from 1.2 to 3.4 in all regions except

Table 7 Factors associated with pain during sex among women by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49 (referent)							
50–69	1.3	1.0	0.6*	0.8	1.0	1.1	2.1*
60–69	1.0	1.2	0.7	1.2	0.9	1.3	1.6
70–80	0.6	0.3*	0.1**	0.6	1.9	1.1	1.1
Poor overall health (*vs* good)	1.4	2.1***	1.7*	1.1	1.0	1.7**	1.6
Level of physical activity							
Average and above (referent)							
Lower than average	1.1	0.6†	1.3	0.5	2.0*	0.8	2.2*
Vascular diseases	1.2	1.5†	1.2	1.3	1.4	1.1	1.4
Hysterectomy	0.9	0.8	0.8	1.5	0.4*	1.2	0.1***
Smoking							
Never							
Smoked before	1.6	1.2	1.2	1.1	1.1	0.4*	0.7
Currently smoking	1.2	0.8	1.1	1.2	1.0	1.0	0.3*
Thinking of sex							
Never or <1/month (referent)							
A few times/month	0.7	0.6†	0.6*	0.6	1.0	0.8	1.5
A few times/week	0.7	1.1	0.4**	0.4	0.2	n.a.	5.7**
Belief that aging reduces sex energy	1.2	1.2	1.9**	0.5*	0.6†	1.2	0.8
Education							
College (referent)							
High school	0.5*	0.8	1.0	1.2	0.9	1.0	0.7
Primary/elementary	0.9	1.2	0.6	0.7	1.1	1.2	0.5
Belief in religion guiding sex	1.7†	1.2	1.3	1.7	1.5	0.9	3.5**
Divorce in past 3 y	n.a.	2.1	0.3*	0.7	1.1	1.7	0.3
Financial problems in last 3 y	0.8	0.9	1.4	2.2*	1.0	1.6*	1.1
Depression diagnosed	1.8*	1.3	1.6†	1.5	1.6	1.3	1.8
Partnership status							
Exclusive and committed (referent)							
Exclusive but not committed	0.7	0.2**	1.5	0.3*	1.6	0.7	0.7
Nonexclusive	0.4	0.6	1.2	1.9	1.4	0.4	1.5
Future of the relationship							
High hope (referent)							
Worried	1.3	2.8**	2.1*	1.5	2.4†	0.8	1.3
No future	2.0	1.8†	2.3*	0.7	0.5	1.4	1.7
Frequency of sexual relationship							
Several times/week (referent)							
<1/week	1.6	1.5*	1.6	2.4**	1.1	1.2	1.2
<1/month	2.6**	1.4	1.0	1.7	1.3	1.6*	1.2
Usually does not engage in foreplay	0.7	0.8	1.0	1.1	0.9	1.3	0.8
χ^2	79.0	85.1	105.4	44.0	49.1	99.2	80.2
d.f.	28	28	28	25	27	27	27
Observations	1728	1759	1589	430	840	1366	531

Odds ratios from logistic regression. Based on reports from sexually active women. Country differences in each region controlled.
Northern Europe includes Austria, Belhium, Sweden, UK, and Germany.
Southern Europe includes France, Israel, Italy, and Spain.
Non-Europe West includes Australia, Canada, South Africa, and the USA.
Central South America includes Brazil.
Middle East includes Algeria, Morocco, and Turkey.
East Asia includes China, Hong Kong, Korea, and Japan.
Southeast Asia includes Indonesia, Philippine, and Malaysia.
†$P \leq 0.10$; *$P \leq 0.05$; **$P \leq 0.01$; ***$P \leq 0.001$.

Southeast Asia (OR = 0.6)) all elevate the likelihood of reporting this problem (Table 8).

For men, a lack of interest in sex is associated with older age (OR up to 10.6, with considerable variability between regions), poor health (OR from 0.8 to 2.6), thinking about sex infrequently (with thinking of sex never or less than once a month as the referent, sexually active women who thought

Table 8 Factors associated with finding sex pleasurable among women by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49 (referent)							
50–69	0.7	1.5	0.9	0.8	1.1	1.3	1.0
60–69	1.4	1.2	0.9	1.0	1.5	1.4	0.5
70–80	1.8	2.3*	0.6	n.a.	0.9	0.9	1.3
Poor overall health (*vs* good)	1.0	1.8**	1.5†	1.3	0.9	1.3†	1.4
Level of physical activity							
Average and above (referent)							
Lower than average	0.6	1.1	1.1	1.9	2.9***	1.3	2.5***
Vascular diseases	1.1	1.0	1.0	0.9	1.4	1.1	1.2
Hysterectomy	1.0	1.0	1.0	1.1	1.7	1.0	0.8
Smoking							
Never							
Smoked before	0.8	1.8*	1.2	0.8	1.0	0.6	2.7
Currently smoking	0.8	1.3	1.3	0.9	1.0	1.1	1.4
Thinking of sex							
Never or <1/month (referent)							
A few times/month	0.7	0.7	0.4***	0.5	0.7†	0.5***	0.7
A few times/week	0.7	0.4	0.3***	0.1*	0.2*	0.6	0.4
Belief that aging reduces sex energy	1.5†	1.6*	1.7*	0.9	1.3	1.4*	1.3
Education							
College (referent)							
High school	0.8	1.2	0.8	1.7	1.1	1.1	0.5*
Primary/elementary	0.4†	2.0*	0.9	0.6	1.0	1.4	0.4*
Belief in religion guiding sex	1.7*	1.1	1.2	0.8	0.9	1.6†	1.0
Divorce in past 3 y	n.a.	2.9†	1.0	n.a.	0.6	1.0	0.6
Financial problems in last 3 y	1.2	1.0	1.5*	1.1	1.4	1.0	1.6†
Depression diagnosed	1.9*	1.4	1.2	1.0	1.9**	1.6	3.9**
Partnership status							
Exclusive and committed (referent)							
Exclusive but not committed	0.6	0.4*	0.9	0.1*	2.1	0.7	0.8
Nonexclusive	1.0	1.5	0.8	1.2	1.1	1.8	0.7
Future of the relationship							
High hope (referent)							
Worried	1.5	1.8	2.2**	2.1	1.0	2.4***	0.9
No future	2.6	1.2	2.9**	1.5	1.2	3.3***	3.4†
Frequency of sexual relationship							
Several times/week (referent)							
<1/week	1.3	1.0	1.3	1.2	1.9**	1.1	0.6†
<1/month	2.3*	1.0	1.6†	1.6	1.9†	0.8	1.0
Usually does not engage in foreplay	1.6	0.6†	0.9	3.4***	0.9	1.8***	1.6†
χ^2	80.6	66.9	109.8	43.6	80.8	107.0	65.0
d.f.	27	26	29	23	27	29	28
Observations	1053	919	1557	351	719	1357	550

Odds ratios from logistic regression. Based on reports from sexually active women. Country differences in each region controlled.
Northern Europe includes Austria, Germany, UK, and Belgium.
Southern Europe includes France and Spain.
Non-Europe West includes Australia, Canada, New Zealand, South Africa, and the USA.
Central South America includes Brazil.
Middle East includes Algeria, Morocco, and Turkey.
East Asia includes China, Hong Kong, Taiwan, Korea, and Japan.
Southeast Asia includes Indonesia, Malaysia, Thailand, and Singapore.
$^{\dagger}P \leq 0.10$; $*P \leq 0.05$; $**P \leq 0.01$; $***P \leq 0.001$.

about sex at least a few times a month had OR from 0.1 to 0.9 in all regions except Middle East (OR = 1.2)), depression (OR from 1.5 to 2.9 in all regions except East Asia (OR = 0.9)), and infrequent sex (OR from 1.6 to 6.7 in all regions except Middle east (OR = 0.7)) (Table 9).

Table 9 Factors associated with the lack of interest in having sex among men by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49 (referent)							
50–69	1.7†	1.6	1.1	0.5	1.3	0.9	1.2
60–69	2.4**	2.9**	1.3	0.6	3.9**	1.2	1.7
70–80	2.3*	2.5*	2.4*	0.6	10.6***	2.1	0.5
Poor overall health (*vs* good)	1.6*	2.0**	0.8	1.5	1.1	2.6**	2.3*
Level of physical activity							
Average and above (referent)							
Lower than average	1.2	1.4	1.8†	1.3	1.5	0.9	1.0
Vascular diseases	1.2	2.0**	1.0	1.1	1.5	0.9	1.3
Prostate disease	0.8	1.7	0.7	2.9†	0.6	1.1	2.9
Smoking							
Never							
Smoked before	1.2	1.2	1.5	1.4	0.7	1.0	1.0
Currently smoking	1.3	1.5	1.9*	2.0	1.0	1.4	0.9
Thinking of sex							
Never or <1/month (referent)							
A few times/month	0.6	0.9	0.6	0.2*	0.6	0.4*	0.5
A few times/week	0.4†	0.5	0.3**	0.1**	1.2	1.0	0.9
Belief that aging reduces sex energy	1.5†	2.3***	1.2	1.6	1.2	1.5	1.1
Education							
College (referent)							
High school	1.1	0.7	0.6**	1.9	1.5	1.6	0.9
Primary/elementary	1.1	0.6	0.3**	2.0	0.5	1.0	0.5
Belief in religion guiding sex	1.4	1.3	1.1	1.6	1.7	1.0	1.3
Divorce in past 3 y	0.4	0.6	0.8	1.7	8.0***	3.4	3.9*
Financial problems in last 3 y	1.1	2.1**	1.4	0.9	1.3	0.6	2.5**
Depression diagnosed	2.2*	1.5	2.3*	2.6†	2.9**	0.9	1.7
Partnership status							
Exclusive and committed (referent)							
Exclusive but not committed	1.0	1.7	1.2	2.3	0.8	n.a.	2.9
Nonexclusive	0.7	1.9†	1.3	2.0	0.2***	1.5	1.4
Future of the relationship							
High hope (referent)							
Worried	2.2†	1.6	1.8	0.1†	2.5†	2.9*	0.5
No future	1.7	1.8†	0.7	1.2	2.5	1.6	n.a.
Frequency of sexual relationship							
Several times/week (referent)							
<1/week	1.7*	2.2***	2.3***	2.6*	0.7	2.2	2.0†
<1/month	3.9***	1.6	3.6***	6.7**	2.8	4.6*	2.2
Usually does not engage in foreplay	1.0	1.0	2.1*	2.2	0.9	1.0	1.4
χ^2	116.1	112.7	102.1	67.8	77.7	61.8	55.8
d.f.	29	28	28	26	25	26	25
Observations	1839	1879	1325	530	493	848	404

Odds ratios from logistic regression. Based on reports from sexually active men. Country differences in each region controlled.
Northern Europe includes Austria, Belgium, Sweden, UK, and Germany.
Southern Europe includes France, Israel, Italy, and Spain.
Non-Europe West includes Australia, Canada, New Zealand, and South Africa.
Central South America includes Brazil and Mexico.
Middle East includes Turkey.
East Asia includes Hong Kong, Taiwan, and Japan.
Southeast Asia includes Indonesia and Thailand.
†$P \leq 0.10$; *$P \leq 0.05$; **$P \leq 0.01$; ***$P \leq 0.001$.

Table 10 Factors associated with the inability to achieve orgasm among men by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49 (referent)							
50–69	1.5	3.4***	0.8	0.6	0.4	1.4	1.9
60–69	1.9	7.7***	1.3	0.4	0.8	1.7†	2.1
70–80	4.9***	7.7***	2.8**	0.3	1.6	4.7***	0.9
Poor overall health (*vs* good)	1.1	1.6*	1.9**	0.5	1.4	1.5†	2.5*
Level of physical activity							
Average and above (referent)							
Lower than average	0.8	1.0	1.3	1.0	3.2	1.7†	1.4
Vascular diseases	1.3	2.1***	1.1	1.0	3.2*	1.3	1.0
Prostate disease	1.4	2.1*	1.0	2.1	7.0*	2.4***	1.8
Smoking							
Never							
Smoked before	1.0	0.7	1.0	0.9	2.1	1.0	1.4
Currently smoking	1.2	0.9	1.5	1.1	0.6	0.9	0.9
Thinking of sex							
Never or <1/month (referent)							
A few times/month	0.7	3.0*	0.4*	0.2†	0.9	1.5	1.0
A few times/week	0.8	2.1	0.3*	0.1**	1.0	0.9	0.3
Belief that aging reduces sex energy	1.6†	0.9	2.0**	1.2	0.8	1.3	0.7
Education							
College (referent)							
High school	1.4	1.5	1.0	1.3	3.9†	1.0	1.0
Primary/elementary	1.0	1.2	0.7	2.0	1.3	2.0*	0.6
Belief in religion guiding sex	1.9*	1.2	1.3	1.1	1.2	0.6	1.9
Divorce in past 3 y	n.a.	0.7	0.7	n.a.	n.a.	1.5	4.7*
Financial problems in last 3 y	2.2†	1.5	1.1	1.3	2.8†	0.7	2.9*
Depression diagnosed	3.1**	1.0	2.4**	2.7	0.2†	0.6	0.1†
Partnership status							
Exclusive and committed (referent)							
Exclusive but not committed	0.6	2.6**	1.9*	0.5	n.a.	2.5	1.0
Nonexclusive	0.7	1.0	3.0**	2.0	1.2	3.1***	0.7
Future of the relationship							
High hope (referent)							
Worried	1.0	1.3	1.7	3.1†	61.6***	1.2	3.7*
No future	0.8	1.7	0.9	2.4	16.3**	1.7	n.a.
Frequency of sexual relationship							
Several times/week (referent)							
<1/week	1.3	1.1	1.5†	2.5*	0.8	2.2**	3.3*
<1/month	1.4	2.4*	1.6	1.7	2.9	2.9**	4.9*
Usually does not engage in foreplay	2.4*	1.3	1.0	3.7*	0.6	0.9	1.4
χ^2	102.7	131.9	102.1	48.8	94.4	128.2	61.2
d.f.	27	28	29	24	23	29	26
Observations	1609	1879	1754	340	595	1639	573

Odds ratios from logistic regression. Based on reports from sexually active men. Country differences in each region controlled.
Northern Europe includes Austria, Sweden, UK, and Germany.
Southern Europe includes France, Israel, Italy, and Spain.
Non-Europe West includes Australia, Canada, New Zealand, the USA, and South Africa.
Central South America includes Brazil.
Middle East includes Turkey.
East Asia includes China, Hong Kong, Taiwan, Korea, and Japan.
Southeast Asia includes Indonesia, Singapore, and Thailand.
†$P \leq 0.10$; *$P \leq 0.05$; **$P \leq 0.01$; ***$P \leq 0.001$.

Table 11 Factors associated with finding sex not pleasurable among men by region

	N. Europe	*S. Europe*	*Non-E. West*	*C/S. America*	*Middle East*	*East Asia*	*SE Asia*
Age (y)							
40–49 (referent)							
50–69	1.5	1.2	0.6	0.8	0.8	1.4	1.9
60–69	2.1†	1.5	1.2	1.5	2.0	1.1	1.7
70–80	2.1	1.0	0.9	n.a.	5.1*	1.4	1.6
Poor overall health (*vs* good)	1.4	1.4	1.1	4.8*	1.2	1.7*	2.7*
Level of physical activity							
Average and above (referent)							
Lower than average	0.6	1.3	1.6	1.5	3.2	0.8	3.0**
Vascular diseases	0.9	1.7*	1.0	0.4	2.6*	1.5	0.6
Prostate disease	1.6	1.7	0.4	2.6	1.5	1.0	1.7
Smoking							
Never							
Smoked before	1.0	0.7	1.0	1.4	1.5	0.8	1.5
Currently smoking	1.0	0.8	1.4	1.2	1.6	1.3	1.6
Thinking of sex							
Never or <1/month (referent)							
A few times/month	0.8	3.2*	0.4*	0.3	0.7	0.8	0.4†
A few times/week	0.4	2.5	0.5	0.3	0.7	0.5	0.5
Belief that aging reduces sex energy	2.1**	1.7*	0.8	2.7	1.4	1.1	0.4*
Education							
College (referent)							
High school	2.1*	0.6	2.4*	2.0	1.4	1.5	1.4
Primary/elementary	0.7	0.9	3.1*	2.2	1.7	2.2†	0.6
Belief in religion guiding sex	2.3**	1.4	1.0	1.3	1.1	0.9	0.7
Divorce in past 3 y	n.a.	0.6	n.a.	4.1	n.a.	0.7	34.0***
Financial problems in last 3 y	2.3*	1.9*	1.1	0.9	3.2**	1.1	1.9
Depression diagnosed	0.9	1.1	1.3	2.5	0.8	0.9	2.3
Partnership status							
Exclusive and committed (referent)							
Exclusive but not committed	1.2	1.8	1.1	3.4	n.a.	n.a.	n.a.
Nonexclusive	2.0	1.8	2.1†	1.6	2.9*	2.9**	2.5
Future of the relationship							
High hope (referent)							
Worried	1.9	1.0	1.2	n.a.	22.7	1.9†	3.5†
No future	0.3	0.9	2.0	2.0	1.9	1.7	n.a.
Frequency of sexual relationship							
Several times/week (referent)							
<1/week	1.3	0.9	1.9*	0.6	1.2	1.0	2.7*
<1/month	2.5*	3.2**	2.3*	0.8	9.9*	2.7*	3.2†
Usually does not engage in foreplay	2.9**	1.5	1.9	2.1	0.6	0.7	0.8
χ^2	124.0	94.7	63.2	48.4	81.2	113.1	75.4
d.f.	27	28	27	23	23	27	24
Observations	1609	1879	1524	283	595	1460	545

Odds ratios from logistic regression. Based on reports from sexually active men. Country differences in each region controlled.
Northern Europe includes Austria, Sweden, UK, and Germany.
Southern Europe includes France, Israel, Italy and Spain.
Non-Europe West includes Australia, Canada, South Africa, and the USA.
Central South America includes Brazil.
Middle East includes Turkey.
East Asia includes China, Taiwan, Korea, and Japan.
Southeast Asia includes Indonesia, Malaysia, and Singapore.
$^{\dagger}P \leq 0.10$; *$P \leq 0.05$; **$P \leq 0.01$; ***$P \leq 0.001$.

Factors associated with the inability to orgasm include age (OR up to 7.7, with considerable variability between regions) and prostate disease (OR from 1.0 to 7.0) (Table 10). Finally, nonpleasurable sex is associated with poor health (OR from 1.1 to 4.8), financial problems (OR from 1.1 to 3.2 in all regions except Central/South America (OR = 0.9)), and infrequent sex (OR up to 9.9, with some variability between regions and in Central/South America the opposite trend is seen (OR 0.6 and 0.8)) (Table 11).

Comments

In this research, we have examined a number of factors that may be contributory in the etiology of sexual problems in women and men. The unique strength of this study is its cross-cultural emphasis. With a sample drawn from 29 countries, we identified several factors that increased the likelihood of a sexual problem in multiple regions of the world. So, for example, the significant effects of age and depression across world regions support both physiological and psychological arguments about the etiology of sexual problems. The GSSAB also provides extensive variation with respect to sexual attitudes, beliefs, and behaviors, and we observed many effects that were significant only in certain regions of the world. Future research should investigate the significance of these contingent effects.

While the prevalence of most sexual problems tends to increase with age,[3–6] we found that older age, net of other factors, consistently increased the likelihood of most sexual problems among men but not women. Only lubrication difficulties among women were positively associated with older age. Studies in elderly individuals have indicated that the effects of aging may be of less importance if the effects of the relationship are taken into account.[7] Since the more physiological sexual problems—erectile and lubrication difficulties—clearly have a significant biological component, it is not surprising that they are associated with increased age.[7–9] However, this study does demonstrate that aging effects are more relevant for men than women. A significant association between aging and the likelihood of male erectile difficulties was seen in all regions except Southeast Asia and Central/South America. The lack of a significant association in Central/South America is in contrast to the findings of a study of incidence of ED by Moreira *et al* (2003) that was conducted recently in Brazil.[10] This apparent inconsistency may be the result of selection bias in the present study. A second important physical factor is a history of vascular disease. Men who reported having had at least one type of vascular disease (eg hypertension, diabetes, heart disease, high cholesterol, and having had a stroke) are more likely to experience erectile difficulties.

Mental health and stress are also thought to influence sexual function. In the GSSAB, depression was associated with the likelihood of erectile and lubrication difficulties in some regions of the world, while stress from financial problems is positively associated with the inability to reach orgasm among women and erectile difficulties among men. We also found some evidence that education was positively associated with the likelihood of lubrication problems and was negatively associated with early ejaculation. Thus, the findings of the current analyses demonstrated some effects of psychosocial context in terms of the significance of stressful events, education level, and the occurrence of depression. Previous studies have reported that depression, stress, and emotional problems can be related to a reduced interest in sex as well as other sexual problems.[3,4] Socioeconomic factors have also been shown to have an effect on sexual function in both women and men.[3]

Relationship issues also play a role in the etiology of sexual problems.[11–14] In relationships in which partners show that they care for one another in everyday matters and communicate effectively about their sexual needs, one would anticipate a relatively low risk of sexual problems. In contrast, where there are difficulties in the overall relationship, one would expect this to have a negative impact on sexual function. In the current analysis, low expectations about the future of the relationship increased the likelihood of an inability to reach orgasm among women, while being in an uncommitted relationship was positively associated with erectile difficulties in men. Finally, having infrequent sex also increased the likelihood of erectile and lubrication difficulties.

The GSSAB has a number of limitations. Methodological issues regarding the study include potentially systematic biases arising from several causes: (1) differences in recruitment of samples and administration of surveys across countries, (2) challenges associated with achieving accurate, valid translations of the survey instrument in multiple languages to ensure the comparability of questions and responses, (3) the adequacy of pooling diverse population samples into regional clusters that are sufficiently homogeneous for comparative statistical analysis, (4) variation in the quality of the country-specific survey organizations across the 29 countries, and (5) the attainment of modest response rates.

Thus, while these data are broadly inclusive, they may not be truly representative of each country's entire adult and older populations because of the relatively modest response rates attained in the countries with the random-digit-dialing protocol and because the door-to-door and intercept protocols drew heavily on urban populations. In general, low completion rates can be of concern because they may be indicative of possible selection bias in the way subjects are recruited and these issues raise

some questions about the accuracy of our prevalence estimates. Prior research has concluded that different modes of administration (telephone and personal survey) resulted in few differences in reports of sexual behavior.[15] We have also tested the effects of the different modes of interview used in the GSSAB and found no effect.[16]

As in all cross-sectional surveys, the causal direction of many covariates is not clear. For example, when we observe an association between overall health or depression and a sexual problem, we cannot discern the causal direction in these cross-sectional data. All of our measures are self-reported, and many are based on responses to single items; however, in a multi-country survey of this size, it would not be feasible to include physical examinations. Hence, there is likely to be considerable classification error, which is most likely reflected in the relatively modest sizes of many ORs. Self-reports of sexual conditions and other health conditions are likely to under-estimate the true prevalence because the subject may not be aware, may not recall or may choose not to disclose that he/she has the problem/condition in question. A subject is unlikely to report a problem/condition that he/she does not have.

Wherever possible, we have compared the country-specific results of the GSSAB surveys with the findings of published studies conducted in these countries. Although there are a number of methodological differences between the various studies, such as the age range of the men included in the analyses and the definition of dysfunction that was applied, we have attempted to compare the estimates of prevalence of sexual dysfunction in GSSAB surveys with those reported in the literature (most published studies report only erectile dysfunction), including the US,[3,6,8,9] Australia,[17,18] Brazil,[19–21] Germany,[22] Italy,[20,23] Thailand,[24] Spain,[25] the UK,[4,26] Malaysia,[20] Japan,[20] Morocco,[27] Mexico,[28] Korea,[29] and other countries and subpopulations.[2,30–39] The age-adjusted estimates of prevalence of erectile dysfunction in GSSAB ranged from 13 to 28% across the seven regions. Similar estimates have been reported in studies conducted in Australia,[18] Brazil,[19] Egypt,[30] France,[31] Germany,[22] Netherlands,[32] Spain,[2] and UK.[26] Considerably higher estimates have been reported in studies from Australia,[17] Belgium,[33] Brazil,[20,21] Finland,[34,35] Italy,[20] Japan,[20] Mexico,[28] Morocco,[27] Thailand,[24] Turkey,[36] USA,[6,8,37] and lower estimates in Denmark[38] and Sweden.[5] Thus, our prevalence estimates are often lower and thus more conservative than in many of the other studies.

Conclusion

A number of sexual problems were found to be frequent in this large sample of women and men aged 40–80 y. Physical, social/emotional, and relationship factors were all found to have a significant impact on the prevalence of one or more sexual problems. In addition, we observed an important gender difference: increasing age was more consistently associated with sexual problems among men. Thus, sexual problems among women and men appear to share similar correlates, but physical factors may play a larger role among men. However, as men age, there may be more psychological and relationship issues as well that influence their sexual satisfaction and performance.

Acknowledgements

The Global Study on Sexual Attitudes and Behaviors was funded by Pfizer Inc. We acknowledge the contribution of our colleagues on the international advisory board for this study: Jacques Buvat (France), Gerald Brock (Canada), Uwe Hartmann (Germany), Sae-Chul Kim (Korea), Rosie King (Australia), Bernard Levinson (South Africa), Ken Marumo (Japan), and Ferruh Simsek (Turkey).

References

1 Tiefer L. A new view of women's sexual problems: Why new? *Why now? J Sex Res* 2001; **38**: 89–96.
2 Simons JS, Carey MP. Prevalence of sexual dysfunctions: results from a decade of research. *Arch Sex Behav* 2001; **30**: 177–219.
3 Laumann EO, Paik A, Rosen RD. Sexual dysfunction in the United States: prevalence and predictors. *JAMA* 1999; **281**: 537–544.
4 Dunn KM, Croft PR, Hackett GI. Association of sexual problems with social, psychological, and physical problems in men and women: a cross sectional population survey. *J Epidemiol Community Health* 1999; **53**: 144–148.
5 Fugl-Meyer AR, Fugl-Meyer KS. Sexual disabilities, problems and satisfaction in 18–74 year old Swedes. *Scand J Sexol* 1999; **2**: 79–105.
6 Bacon CG *et al.* Sexual function in men older than 50 years of age: results from the Health Professionals Follow-up Study. *Ann Intern Med* 2003; **139**: 161–168.
7 Trudel G, Turgeon L, Piche L. Marital and sexual aspects of old age. *Sex Relationship Ther* 2000; **154**: 381–406.
8 Feldman HA *et al.* Impotence and its medical and psychosocial correlates: results of the Massachusetts Male Aging Study. *J Urol* 1994; **151**: 54–61.
9 Panser LA *et al.* Sexual function of men ages 40 to 79 years: The Olmsted County Study of Urinary Symptoms and Health Status among Men. *J Am Geriatr Soc* 1995; **43**: 1107–1111.
10 Moreira ED *et al.* Incidence of erectile dysfunction in men 40 to 69 years old: results from a population-based cohort study in Brazil. *Urology* 2003; **61**: 431–436.
11 Clement U. Sex in long-term relationships: a systematic approach to sexual desire problems. *Arch Sex Behav* 2002; **31**: 241–246.
12 Kaplan HS. *The New Sex Therapy: Active treatment of Sexual Dysfunctions*. Brunner/Mazel: New York, 1974.
13 Masters WH, Johnson VE. *Human Sexual Inadequacy*. Little, Brown and Company: Boston, 1970.

14 Southern S. Facilitating sexual health: intimacy enhancement techniques for sexual dysfunction. *J Mental Health Counsel* 1999; **21**: 15–32.
15 Nebot M *et al.* AISA and behavioural risk factors in women in inner city Baltimore: a comparison of telephone and face to face surveys. *J Epidemiol Community Health* 1994; **48**: 412–418.
16 Nicolosi A *et al.* Sexual behavior and sexual problems after the age of 40: the Global Study of Sexual Attitudes and Behaviors. *Urology* (accepted in press).
17 Pinnock CB, Stapleton AM, Marshall VR. Erectile dysfunction in the community: a prevalence study. *Med J Aust* 1999; **171**: 353–357.
18 Richters J *et al.* Sex in Australia: sexual difficulties in a representative sample of adults. *Aus N Z J Public Health* 2003; **27**: 164–170.
19 Moreira Jr ED *et al.* Prevalence and correlates of erectile dysfunction: results of the Brazilian Study of Sexual Behavior. *Urology* 2001; **58**: 583–588.
20 Nicolosi A *et al.* Epidemiology of erectile dysfunction in four countries: cross-national study of the prevalence and correlates of erectile dysfunction. *Urology* 2003; **61**: 201–206.
21 Moreira Jr ED *et al.* Prevalence and correlates of erectile dysfunction in Salvador, northeastern Brazil: a population-based study. *Int J Impot Res* 2002; **14**(Suppl 2): S3–S9.
22 Braun M *et al.* Epidemiology of erectile dysfunction: results of the 'Cologne Male Survey'. *Int J Impot Res* 2000; **12**: 305–311.
23 Parazzini F *et al.* Frequency and determinants of erectile dysfunction in Italy. *Eur Urol* 2000; **37**: 43–49.
24 Kongkanand A, and the Thai Erectile Dysfunction Epidemiology Study Group. Prevalence of erectile dysfunction in Thailand. *Int J Androl* 2000; **23**(Suppl 2): 77–80.
25 Martin-Morales A *et al.* Prevalence and independent risk factors for erectile dysfunction in Spain: results of the Epidemiologia de la Disfuncion Erectil Masculina Study. *J Urol* 2001; **166**: 569–575.
26 Dunn KM, Croft PR, Hackett GI. Sexual problems: a study of the prevalence and need for health care in the general population. *Fam Pract* 1998; **15**: 519–524.
27 Berrada S, Kadri N, Mechakra-Tahiri S, Nejjari C. Prevalence of erectile dysfunction and its correlates: a population-based study in Morocco. *Int J Impot Res* 2003; **15**(Suppl 1): S3–S7.
28 Ugarte y Romano F, Aguirre JB. Prevalencia de disfunción eréctil en México y factores de riesgo asociados. *Rev Mex Urol* 2001; **61**: 63–76.
29 Cho BL *et al.* Prevalence and risk factors for erectile dysfunction in primary care: results of a Korean study. *Int J Impot Res* 2003; **15**: 323–328.
30 Seyam RM *et al.* Prevalence of erectile dysfunction and its correlates in Egypt: a community-based study. *Int J Impot Res* 2003; **15**: 237–245.
31 Guiliano F *et al.* Prevalence of erectile dysfunction in France: results of an epidemiological survey of a representative sample of 1004 men. *Eur Urol* 2002; **42**: 382–389.
32 Blanker MH *et al.* Erectile and ejaculatory dysfunction in a community-based sample of men 50 to 78 years old: prevalence, concern, and relation to sexual activity. *Urology* 2001; **57**: 763–768.
33 Mak R, de Backer G, Kornitzer M, De Meyer J. Prevalence and correlates of erectile dysfunction in a population-based study in Belgium. *Eur Urol* 2002; **41**: 132–138.
34 Koskimäki J, Hakama M, Huhtala H, Tammela TLJ. Effect of erectile dysfunction on frequency of intercourse: a population based prevalence study in Finland. *J Urol* 2000; **164**: 367–370.
35 Shiri R *et al.* Prevalence and severity of erectile dysfunction in 50 to 75-year-old Finnish men. *J Urol* 2003; **170**: 2342–2344.
36 Akkus E *et al.* Prevalence and correlates of erectile dysfunction in Turkey: a population-based study. *Eur Urol* 2002; **41**: 298–304.
37 Ansong KS, Lewis C, Jenkins P, Bell J. Epidemiology of erectile dysfunction: a community-based study in rural New York state. *Ann Epidemiol* 2000; **10**: 293–296.
38 Ventegodt S. Sex and the quality of life in Denmark. *Arch Sexual Behav* 1998; **27**: 295–307.
39 Lewis RW *et al.* Definition, classification, and epidemiology of sexual dysfunction. In: Rosen *et al* (eds). *Sexual Dysfunctions*. Heath Productions, Ltd: London, 2004, pp. 3–37.