

Sexual Dysfunction among Older Adults: Prevalence and Risk Factors from a Nationally Representative U.S. Probability Sample of Men and Women 57–85 Years of Age

Edward O. Laumann, PhD, Aniruddha Das, MA, and Linda J. Waite, PhD

Department of Sociology and Population Research Center, University of Chicago, Chicago, IL, USA

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ABSTRACT

Introduction. Despite increasing demand for clinical interventions into sexual problems in an aging population, epidemiological data on the subject are scarce.

Aims. To examine the prevalence of sexual problems across different sociodemographic groups, and risk factors for these problems in multiple domains of life.

Methods. Statistical analysis of data from the 2005–2006 National Social Life, Health, and Aging Project (NSHAP), a nationally representative U.S. probability sample of 1,550 women and 1,455 men aged 57–85 at the time of interview.

Main Outcome Measures. Likelihood of experiencing sexual dysfunction in the preceding 12 months.

Results. Sexual problems among the elderly are not an inevitable consequence of aging, but instead are responses to the presence of stressors in multiple life domains. This impact may partly be gender differentiated, with older women's sexual health more sensitive to their physical health than is true for men. The mechanism linking life stress with sexual problems is likely to be poor mental health and relationship dissatisfaction. The NSHAP results demonstrate the consistent impact of poor mental health on women's reports of sexual problems and the less consistent association with men's problems.

Conclusions. The results point to a need for physicians who are treating older adults experiencing sexual problems to take into account not simply their physical health, but also their psychosocial health and satisfaction with their intimate relationship. **Laumann EO, Das A, and Waite LJ. Sexual dysfunction among older adults: Prevalence and risk factors from a nationally representative U.S. probability sample of men and women 57–85 years of age. J Sex Med **;**:**_**.**

Key Words. Sexual Dysfunctions; Elderly; NSHAP

Introduction

Sexual problems are characterized by diminished or absent sexual interest, and by disturbances in the physiological or psychosocial patterns associated with the sexual response cycle [1–3]. Previous studies have found sexual problems to be strongly correlated, in women and men, with physical and mental health, with demographic factors such as educational attainment, and with satisfaction in the intimate relationship [1,4–8]. However, correlates of sexual problems among older adults have not been systematically studied—due at

least in part to a lack of nationally representative data. Sexual health in late life may be conceptualized as an outcome of a complex system of biophysical, psychological, and sociocultural factors [9]. Community studies with small subsamples of elderly respondents suggest that the prevalence of sexual problems may be high among both elderly women and men. Among male respondents—mainly white—aged 40–70 in the Boston-area Massachusetts Male Aging Study, 34.8% had some degree of erectile problems; this prevalence increased with age, and decreased with physical and emotional health [1,10]. Other U.S. and European

community studies have reported a high prevalence for (lack of) “sex drive” (26%) [11] and erectile dysfunction (26%) [12] in elderly men. The few nationally representative studies with subsamples of the elderly have largely come from Europe [13–15], with the only U.S. study to date, the National Health and Social Life Survey (NHSLs), limited to those 59 or below [16]. A notable exception is the 29-country Global Study of Sexual Attitudes and Behaviors (GSSAB), restricted to those between 40 and 80, which included a subsample (1,845 women and 2,205 men) from the “non-European West” (Australia, Canada, New Zealand, South Africa, and United States). However, the response rate to the GSSAB was quite low—19%—suggesting caution in the use of these data [17].

The present study examines the correlates of sexual problems among older adults using data from the National Social Life, Health, and Aging Project (NSHAP), a nationally representative probability sample of U.S. adults between ages 57 and 85 years. Prior analysis of NSHAP data found that about half of both women and men who reported any sexual activity in the preceding year also reported at least one bothersome sexual problem [18]. This prior study, which presented basic demographic correlates of reports of sexual problems, laid the groundwork for the present analyses. We estimate the odds ratios (ORs) of sexual problems for key risk factors in the literature, controlling for demographic factors. Combining these results with those for younger groups from the NHSLs [1] yields a comprehensive perspective on sexual problems over the life course.

Methods

Survey

The NSHAP is a national probability sample of 1,550 women and 1,455 men ages 57–85; blacks, Hispanics, men, and those aged 75–85 were oversampled. In-home interviews of household-dwelling adults in these age ranges were conducted between July 2005 and March 2006, in both English and Spanish, by trained interviewers. Additional data included assessments of physical and sensory function, height and weight, and salivary, blood, and vaginal mucosal samples—all collected at the time of interview. The survey had an unweighted response rate of 74.8% and a weighted response rate of 75.5% [18,19]. Institutional review boards at the University of Chicago and the

National Opinion Research Center approved the data collection procedures.

Data on sexual problems were collected in the NSHAP through seven dichotomous response items, each asking the respondent about the presence of a sexual problem for several months or more over the preceding 12 months. These questions were asked during the main face-to-face interview of all participants reporting any partnered sex in the preceding year. The response items were slightly modified versions of items in the NHSLs, and included: (i) lack of interest in sex; (ii) arousal problems—trouble maintaining or achieving an erection (men) and trouble lubricating (women); (iii) climaxing too early; (iv) inability to achieve an orgasm; (v) experiencing pain during sex; (vi) not finding sex pleasurable; and (vii) anxiety about performance [20]. With the exception of sexual pain, respondents who reported a problem were also asked how much they were bothered by it, following the recommendations of a consensus panel on women’s sexual dysfunctions [21]. However, inclusion of personal distress into definitions of sexual problems or dysfunctions has been critiqued. For instance, it has been demonstrated that personal distress can be poorly correlated with reports of physical sexual problems, and may be more strongly associated with more “global” factors such as emotional and relationship satisfaction [22]. Furthermore, using a personal distress criterion would both lower the cell sizes for our sexual problem measures below analytic utility, and increase the likelihood of endogeneity—i.e., feedback effects from sexual problems to predictors. Finally, a personal bother criterion would render direct comparisons with the prevalence estimates for younger U.S. adults [1] impossible. Therefore, following the July 2004 recommendations of the International Consultation on Erectile Dysfunction, the present study only examined the correlates of sexual problems per se [2,3].

We estimated the social distribution of sexual problems for a basic set of demographic indicators: age group, ethnicity, marital status, and education. In addition, we examined three sets of risk factors for sexual problems: (i) physical health, (ii) mental health, and (iii) sexual or partnership experiences. Physical health was indexed by self-reported poor to fair health, and by any lifetime diagnosis of sexually transmitted diseases (STDs)—a measure likely to capture any lasting STD-related physiological damage as well as a propensity to engage in less healthy behaviors overall. In addition, we included an indicator for treated urinary tract

syndrome based on the current use of genitourinary tract agents. Mental health was indicated, first, by standardized summary indexes for depression (based on the 11-item Iowa form of the Center for Epidemiological Studies Depression Scale) [23,24]; anxiety (using a modified version of the seven-item anxiety subscale of the Hospital Anxiety and Depression Scale) [25]; and stress (using a four-item modified version of the Perceived Stress Scale) [26]. In addition, self-ratings of mental health and self-reported daily alcohol consumption were included in this set.

The final set of risk factors—sexual or partnership experiences—included, first, a two-item standardized summary index for relationship satisfaction, comprised of happiness as well as emotional satisfaction in the partnership. The Cronbach's alpha coefficient for this scale was 0.72 [27]. The standardized version of the index had a weighted mean of 0.04, and ranged from -3.55 to 1.27, with higher values denoting more satisfaction in the partnership. Next, dummy variables indicated current sexual patterns—self-reported frequency of partnered sex, sexual thoughts, and masturbation. A final dummy indicator in this cluster indexed any same sex experiences over the lifetime. Our use of and specific thresholds for dummy variables in this cluster were designed to ensure comparability with prior results on younger age groups from the NHLS [1].

We estimated a series of separate logistic regression models for women and men. The first model contains basic demographic variables only. The next models add the three sets of risk factors, one at a time. Because our mental health effects were highly collinear, we also estimated a final set of models adding each of these measures, one at a time, to the baseline variables. Results are presented as adjusted ORs. All analyses were conducted with the Stata 10.0 statistical package (Stata Corp., College Station, Texas, USA) [28].

Results

Social Distribution of Sexual Problems

The NSHAP data allow us to investigate the social distribution of sexual problems among sexually active older adults. Tables 1 and 2 present the prevalence of sexual problems across sociodemographic categories, among sexually active women and men, respectively. There is little, if any, increase in sexual problems with increasing age for either gender, with the exception of men's reports of inability to achieve orgasm and erectile

problems—both of which are positively correlated with age. In contrast, relative to white women, we notice roughly 2.5 times more reports of sexual pain among Hispanic women (OR = 2.4)—as well as a 60% lower incidence of reports of lubrication problems among black women—and of reports of performance anxiety among Hispanic or other women (OR = 0.4 for each). Black men are more than twice as likely to report lack of sexual interest (OR = 2.3) and premature climax (OR = 2.9), and almost four times as likely to report lack of sexual pleasure (OR = 3.8) as white men.

Next, among men reporting sex in the preceding year, lack of pleasure is sharply lower among widowed or never married (OR = 0.1) than married men, while, intriguingly, divorced or separated men are twice as likely (OR = 2.0) to experience performance anxiety. Finally, while having some college education lowers women's performance anxiety by half or more relative to women with less than a high school degree, and having a high school or equivalent education similarly lowers women's lack of sexual interest, the effect among men is more selective. Specifically, reports of both inorgasmia and lack of sexual pleasure decline with men's higher education—in contrast to erectile problems, which are sharply elevated (OR = 1.9) among men with some college education.

All of the demographic models controlled the respondent's current religious affiliation. Because few of the religion effects reach significance, however, we do not report these results.

Risk Factors

Tables 3 and 4 present logistic regression results for three sets of risk factors: (i) physical health, (ii) mental health, and (iii) sexual or partnership experiences. All risk factor models include the basic demographic covariates—age, ethnicity, religion, marital status, and education—as control variables. As noted, indicators for the three types of risk factors are added as blocks in these additive models. Results indicate that health conditions strongly affect the likelihood of sexual problems among women, but less so among men. Any lifetime history of STDs, for instance, roughly quadruples women's odds of reporting sexual pain (OR = 3.8) and triples their lubrication problems (OR = 3.1). Similarly, lower urinary tract syndrome increases women's lack of sexual interest (OR = 6.5) and lack of sexual pleasure (4.2). Women's lack of pleasure is also higher (OR = 2.7) among those with poor self-rated physical health. Among men, in contrast, the only correlations are

Table 1 Demographic correlates of sexual problems in preceding year among sexually active U.S. women aged 57–85

	Lacked interest in sex			Unable to achieve orgasm			Experienced pain during sex		
	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†
Age (ref: 57–64)	258	45.4 (37.9–52.9)	1.0	246	35.0 (28.9–41.2)	1.0	262	18.2 (13.8–22.7)	1.0
Age 65–74	176	37.6 (28.3–46.9)	0.8 (0.5–1.2)	168	33.4 (25.4–41.3)	1.0 (0.6–1.7)	176	18.9 (11.0–26.8)	1.1 (0.6–1.9)
Age 75–85	65	49.3 (36.8–61.9)	1.3 (0.7–2.1)	60	38.2 (23.7–52.8)	1.3 (0.6–2.6)	63	11.8 (4.3–19.4)	0.6 (0.3–1.5)
Race/ethnicity (ref: non-Hispanic white)	375	43.5 (37.0–49.9)	1.0	357	34.3 (30.1–38.6)	1.0	374	17.4 (13.4–21.3)	1.0
Black	67	47.2 (32.3–62.1)	0.9 (0.4–1.8)	64	36.5 (26.5–46.5)	1.2 (0.7–2.3)	66	8.8 (1.0–16.5)	0.5 (0.2–1.2)
Hispanic/other	57	37.2 (20.6–53.8)	0.6 (0.3–1.4)	53	38.2 (22.2–54.2)	0.7 (0.3–1.7)	61	31.2 (16.5–46.0)	2.3* (1.0–5.4)
Marital status (ref: married/cohabiting)	442	44.9 (38.4–51.5)	1.0	419	35.1 (30.9–39.2)	1.0	443	18.4 (14.4–22.4)	1.0
Divorced/separated	31	23.8* (4.5–43.0)	0.4 (0.1–1.1)	29	34.1 (13.9–54.3)	1.0 (0.4–2.6)	31	7.9* (–1.5–17.3)	0.4 (0.1–1.4)
Widowed/never married	26	32.2 (9.2–55.1)	0.6 (0.2–1.9)	26	29.6 (7.1–52.1)	0.8 (0.2–2.6)	27	19.0 (0.2–37.8)	1.4 (0.4–4.7)
Education (ref: less than high school)	73	55.3 (40.5–70.0)	1.0	64	38.7 (24.7–52.8)	1.0	72	12.6 (4.6–20.5)	1.0
High school	139	40.2 (29.4–51.0)	0.4* (0.2–1.0)	133	26.9 (17.5–36.3)	0.6 (0.2–1.6)	140	14.4 (6.6–22.2)	1.1 (0.4–3.2)
Some college	161	42.9 (34.0–51.7)	0.6 (0.3–1.2)	157	42.5 (33.9–51.0)	1.1 (0.5–2.4)	163	20.0 (13.6–26.5)	1.7 (0.7–3.8)
College graduate or higher	126	41.6 (31.4–51.7)	0.6 (0.3–1.5)	120	31.2 (23.1–39.3)	0.8 (0.4–1.8)	126	20.9 (13.0–28.7)	1.7 (0.7–4.4)
Total	499	43.3 (37.1–49.5)		474	34.8 (31.1–38.6)		501	17.8 (14.1–21.5)	
	Sex not pleasurable			Anxious about performance			Trouble lubricating		
	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†
Age (ref: 57–64)	259	23.4 (17.6–29.2)	1.0	260	10.7 (6.5–14.9)	1.0	258	36.1 (29.7–42.6)	1.0
Age 65–74	174	22.4 (15.3–29.4)	1.0 (0.6–1.6)	175	12.7 (6.4–19.1)	1.2 (0.5–2.9)	172	43.7 (35.3–52.1)	1.4 (0.8–2.3)
Age 75–85	60	24.9 (14.8–35.0)	1.2 (0.7–2.3)	60	9.9 (1.7–18.2)	0.9 (0.3–2.7)	61	43.6 (27.8–59.3)	1.4 (0.7–3.0)
Race/ethnicity (ref: white)	367	23.3 (18.8–27.8)	1.0	368	10.4 (7.5–13.4)	1.0	366	40.4 (35.3–45.6)	1.0
Black	66	26.6 (13.0–40.2)	1.0 (0.5–1.9)	65	25.5* (13.2–37.9)	2.1 (0.9–5.0)	66	23.3** (11.1–35.5)	0.4* (0.2–0.8)
Hispanic/other	60	19.0 (9.7–28.3)	0.6 (0.3–1.2)	62	5.6* (2.1–9.2)	0.4* (0.1–1.0)	59	44.5 (30.1–59.0)	1.5 (0.7–3.2)
Marital status (ref: married/cohabiting)	436	23.3 (18.9–27.8)	1.0	438	11.3 (8.3–14.3)	1.0	434	40.4 (35.7–45.0)	1.0
Divorced/separated	31	30.9 (13.8–48.0)	1.6 (0.7–3.6)	31	7.6 (–1.1–16.4)	0.6 (0.2–2.3)	31	24.9 (4.4–45.4)	0.5 (0.2–1.6)
Widowed/never married	26	7.1* (–6.8–21.1)	0.2 (0.0–2.2)	26	16.2 (13.1–34.4)	1.1 (0.2–5.1)	26	35.4 (13.5–57.2)	0.9 (0.4–2.2)
Education (ref: less than high school)	71	33.4 (19.6–47.1)	1.0	72	23.8 (13.1–34.4)	1.0	68	36.4 (21.1–51.8)	1.0
High school	137	18.2 (11.5–25.0)	0.4 (0.2–1.1)	135	10.5 (4.2–16.7)	0.4 (0.1–1.1)	138	38.3 (29.7–46.8)	1.0 (0.4–2.7)
Some college	161	25.2 (17.7–32.7)	0.6 (0.3–1.2)	163	10.8 (5.9–15.7)	0.4* (0.1–1.0)	162	42.4 (35.4–49.4)	1.2 (0.6–2.6)
College graduate or higher	124	21.1 (14.4–27.8)	0.6 (0.3–1.5)	125	6.9** (2.5–11.4)	0.3* (0.1–0.7)	123	37.4 (29.4–45.5)	1.3 (0.6–2.8)
Total	493	23.2 (18.9–27.5)		495	11.3 (8.6–13.9)		491	39.3 (35.0–43.6)	

*Significant at $P < 0.05$; **significant at $P < 0.01$.

†Odds ratios (ORs) are from survey-weighted logistic regression models, with sample limited to women reporting any sex in preceding year. 95% confidence intervals (CIs) in parentheses. Italics denote reference category. All models controlled current religious affiliation.

Table 2 Demographic correlates of sexual problems in preceding year among sexually active U.S. men aged 57–85

	Lacked interest in sex			Unable to achieve orgasm			Experienced pain during sex		
	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†
Age (ref: 57–64)	415	27.8 (20.7–34.9)	1.0	409	16.1 (11.9–20.3)	1.0	414	3.0 (1.2–4.9)	1.0
Age 65–74	333	28.7 (23.0–34.5)	1.0 (0.6–1.7)	326	22.9 (17.6–28.1)	1.5 (0.9–2.4)	333	3.2 (1.2–5.3)	1.0 (0.3–3.0)
Age 75–85	126	24.4 (16.6–32.3)	0.9 (0.5–1.5)	124	33.0** (24.7–41.2)	2.4** (1.4–4.0)	125	1.0 (–0.4–2.5)	0.3 (0.1–1.4)
Race/ethnicity (ref: non-Hispanic white)	627	26.9 (23.0–30.9)	1.0	620	20.7 (17.2–24.1)	1.0	627	2.6 (1.3–3.9)	1.0
Black	127	42.8 (25.9–59.8)	2.3* (1.0–5.2)	125	18.8 (11.0–26.6)	0.7 (0.4–1.1)	126	4.5 (0.4–8.6)	2.3 (0.8–6.5)
Hispanic/other	120	21.0 (9.6–32.3)	0.7 (0.3–1.6)	114	19.1 (8.0–30.2)	0.9 (0.4–2.4)	119	3.8 (–0.2–7.9)	1.3 (0.3–6.2)
Marital status (ref: married/cohabiting)	738	28.6 (24.5–32.7)	1.0	724	19.6 (16.2–22.9)	1.0	736	2.8 (1.6–4.1)	1.0
Divorced/separated	77	24.3 (10.4–38.3)	0.7 (0.3–1.8)	77	26.6 (13.0–40.2)	1.9 (0.9–4.1)	77	2.7 (–1.2–6.6)	0.8 (0.2–3.2)
Widowed/never married	59	17.5 (7.2–27.7)	0.5 (0.2–1.1)	58	25.9 (14.3–37.5)	1.2 (0.6–2.2)	59	3.8 (–2.4–9.9)	1.6 (0.2–12.7)
Education (ref: less than high school)	163	27.7 (19.3–36.2)	1.0	158	28.1 (18.5–37.6)	1.0	161	2.1 (–0.1–4.2)	1.0
High school	198	30.6 (22.2–39.0)	1.2 (0.7–2.2)	195	19.7 (13.5–26.0)	0.6 (0.3–1.2)	197	4.4 (1.5–7.4)	2.9 (0.8–10.0)
Some college	243	30.7 (23.5–37.9)	1.1 (0.6–2.0)	238	23.6 (17.2–29.9)	0.7 (0.3–1.2)	242	2.3 (0.3–4.3)	1.3 (0.3–6.6)
College graduate or higher	270	23.5 (15.5–31.5)	0.9 (0.4–1.8)	268	15.4* (10.1–20.7)	0.4* (0.2–0.9)	272	2.6 (0.3–4.8)	1.2 (0.3–5.1)
Total	874	27.7 (24.1–31.4)		859	20.4 (17.2–23.5)		872	2.9 (1.7–4.1)	

	Sex not pleasurable			Anxious about performance			Trouble maintaining or achieving erection		
	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†	N	Prevalence (95% CI)	OR†
Age (ref: 57–64)	414	3.8 (2.4–5.2)	1.0	413	25.1 (20.9–29.2)	1.0	413	30.7 (25.4–36.1)	1.0
Age 65–74	332	7.1 (3.7–10.4)	1.9 (0.9–3.9)	328	29.1 (23.1–35.1)	1.2 (0.8–1.8)	332	44.5** (38.8–50.3)	1.8** (1.3–2.5)
Age 75–85	125	4.8 (1.1–8.6)	1.2 (0.5–2.8)	125	29.6 (20.0–39.2)	1.2 (0.8–2.0)	122	43.3* (34.3–52.3)	1.9** (1.2–3.0)
Race/ethnicity (ref: non-Hispanic white)	626	3.9 (2.3–5.4)	1.0	621	27.2 (23.3–31.1)	1.0	623	37.9 (33.4–42.5)	1.0
Black	127	13.0** (6.9–19.1)	3.8** (1.4–10.3)	127	28.5 (16.7–40.3)	0.9 (0.5–1.8)	126	35.9 (23.0–48.8)	1.0 (0.5–1.9)
Hispanic/other	118	7.6 (2.8–12.4)	1.1 (0.4–2.8)	118	23.6 (10.9–36.3)	0.9 (0.4–1.9)	118	28.6 (17.2–40.0)	0.7 (0.4–1.4)
Marital status (ref: married/cohabiting)	736	5.2 (3.6–6.7)	1.0	732	25.4 (21.9–28.9)	1.0	731	36.3 (32.0–40.6)	1.0
Divorced/separated	77	6.9 (–1.8–15.7)	1.0 (0.2–5.9)	76	38.7 (25.4–52.1)	2.0* (1.0–3.8)	77	40.9 (27.2–54.7)	1.3 (0.7–2.4)
Widowed/never married	58	0.7** (–0.8–2.2)	0.1* (0.0–0.7)	58	38.4 (22.1–54.6)	1.8 (0.8–3.7)	59	41.0 (26.8–55.1)	1.0 (0.6–1.9)
Education (ref: less than high school)	162	11.8 (7.2–16.4)	1.0	162	24.5 (16.0–32.9)	1.0	161	28.2 (19.3–37.2)	1.0
High school	197	3.6** (1.2–6.0)	0.3* (0.1–1.0)	196	27.8 (20.4–35.2)	1.2 (0.6–2.2)	196	35.5 (26.0–44.9)	1.4 (0.7–2.9)
Some college	241	4.9** (2.0–7.7)	0.5* (0.2–0.9)	238	28.8 (22.3–35.2)	1.2 (0.8–2.0)	240	42.9* (36.6–49.3)	1.9* (1.2–3.2)
College graduate or higher	271	3.5** (1.3–5.7)	0.3** (0.1–0.7)	270	25.9 (20.3–31.6)	1.1 (0.6–2.0)	270	36.3 (29.3–43.3)	1.7 (1.0–3.1)
Total	871	5.0 (3.6–6.5)		866	27.0 (23.6–30.3)		867	36.9 (32.7–41.0)	

Table 2 Continued

	Climax too early		
	N	Prevalence (95% CI)	OR†
Age (ref: 57–64)	407	29.9 (23.7–36.1)	1.0
Age 65–74	324	28.0 (23.2–32.9)	0.9 (0.6–1.3)
Age 75–85	122	21.5 (13.4–29.6)	0.7 (0.4–1.1)
Race/ethnicity (ref: non-Hispanic white)	615	25.9 (21.7–30.0)	1.0
Black	123	49.8** (40.8–58.7)	2.9** (2.0–4.1)
Hispanic/other	115	29.6 (18.2–41.0)	1.2 (0.6–2.7)
Marital status (ref: married/cohabiting)	718	29.0 (24.8–33.1)	1.0
Divorced/separated	77	22.3 (10.0–34.7)	0.6 (0.2–1.3)
Widowed/never married	58	24.3 (11.4–37.1)	0.8 (0.4–1.7)
Education (ref: less than high school)	157	31.3 (21.6–40.9)	1.0
High school	194	27.2 (19.0–35.4)	0.9 (0.5–1.9)
Some college	234	29.1 (22.6–35.6)	1.0 (0.6–1.9)
College graduate or higher	268	27.2 (18.8–35.6)	1.0 (0.5–2.0)
Total	853	28.3 (24.5–32.1)	

*Significant at $P < 0.05$; **significant at $P < 0.01$.

†Odds ratios (ORs) are from survey-weighted logistic regression models, with sample limited to men reporting any sex in preceding year. 95% confidence intervals (CIs) in parentheses. Italics denote reference category. All models controlled current religious affiliation.

between any lifetime history of STDs and non-pleasurable sex (OR = 5.4), and between urinary tract syndrome and erectile problems (OR = 3.7).

Poor mental health is associated with both women's and men's reports of sexual problems. In our additive models (Tables 3 and 4), anxiety raises lack of sexual interest in both women (OR = 1.6) and men (OR = 1.4), as well as women's inorgasmia (OR = 1.5) and lack of pleasure in sex (OR = 1.4). Depression has a more selective association, affecting only men's inorgasmia and erectile problems (OR = 1.5 for each). Our mental health results are especially consistent in the final models (Table 5), containing indicators added one at a time to baseline controls. Depression and fair or poor self-rated mental health each has strong positive correlations with all but one of women's sexual problems, while stress and anxiety lack correlations only with more physiological conditions like sexual pain and trouble lubricating.

Similarly, among men, every sexual problem, except for pain during sex and premature climax, is positively associated with poor health on at least one of these four mental health measures. Daily alcohol consumption, in contrast, seems to

improve women's sexual function—lowering lack of sexual interest (OR = 0.4) and lack of pleasure (OR = 0.3)—but has no effect for men.

The final cluster of variables in Tables 3 and 4 proxies a person's current and past partnership experiences. Satisfaction in the relationship is associated with fewer sexual problems, specifically less lack of sexual pleasure in both women (OR = 0.6) and men (OR = 0.5), as well as lowered odds of women's inorgasmia and men's lack of sexual interest (OR = 0.7 for both). Sexual problems are also positively associated with a "global" lowering of current sexual experiences such as infrequent sex (especially among men) and sexual thoughts (among women). In addition, men's lifetime same sex activity is associated with their current lack of sexual interest (OR = 5.0).

For both theoretical and analytic reasons, as noted, we chose not to use a personal bother criterion for our sexual problem measures. In our supplementary analysis (not shown), however, the results for bothersome sexual problems largely parallel those for our per se measures—although, because of smaller cell sizes, there are fewer significant correlations. Because of these issues, as well as

Table 3 Physical and psychosocial correlates of sexual problems in preceding year among sexually active U.S. women aged 57–85

	Lacked interest in sex		Unable to achieve orgasm		Experienced pain during sex		Sex not pleasurable		Anxious about performance		Trouble lubricating	
	N	OR	N	OR	N	OR	N	OR	N	OR	N	OR
Physical health	342		325		345		338		341		337	
STD ever		1		0.9		3.8*		0.6		1.6		3.1*
		(0.4–2.5)		(0.4–2.0)		(1.4–10.4)		(0.2–1.3)		(0.5–4.6)		(1.2–8.0)
Treated urinary tract syndrome		6.5**		2.1				4.2**		2		0.5
		(1.6–26.2)		(0.4–10.7)				(1.5–11.3)		(0.3–13.5)		(0.1–1.5)
Poor to fair health (self-rating)		1.7		1.8		1.9		2.7*		1.4		2.2
		(0.9–3.2)		(0.8–4.1)		(0.7–5.2)		(1.3–5.8)		(0.7–3.0)		(0.9–5.0)
Mental health†	469		447		471		464		466		461	
Anxiety†		1.6**		1.5**		1.1		1.4*		1.2		1.2
		(1.2–2.1)		(1.1–1.9)		(0.7–1.7)		(1.0–2.0)		(0.8–1.9)		(0.8–1.7)
Depression†		1.2		1.2		1.1		1.2		1.3		1
		(0.8–1.6)		(0.8–1.8)		(0.7–1.6)		(0.8–1.7)		(0.9–1.9)		(0.7–1.5)
Sexual/partnership experiences	391		379		390		390		396		385	
Relationship satisfaction†		0.9		0.7**		0.9		0.6**		1.1		1
		(0.6–1.2)		(0.5–0.9)		(0.6–1.3)		(0.4–0.9)		(0.7–1.6)		(0.8–1.2)
Sex frequency no more than once monthly		3.5**		0.8		1.9		1		1.1		1.4
		(2.1–5.9)		(0.4–1.5)		(1.0–3.7)		(0.5–1.8)		(0.6–2.0)		(0.7–2.7)
Thinks about sex less than once weekly		2.8**		1.9*		1.6		3.9**		2.5**		0.9
		(1.6–4.7)		(1.1–3.2)		(0.8–3.3)		(2.1–7.1)		(1.3–4.8)		(0.5–1.7)
Masturbation at least once monthly		0.8		1.4		0.9		1.7		1.5		0.9
		(0.4–1.9)		(0.7–2.7)		(0.3–2.6)		(0.8–3.7)		(0.6–3.7)		(0.4–1.9)
Any same sex activity ever		0.2		2.2		0.5		0.7		0.7		1.8
		(0.0–1.9)		(0.6–8.3)		(0.0–6.0)		(0.1–4.2)		(0.1–4.2)		(0.4–8.9)

*Significant at $P < 0.05$; **significant at $P < 0.01$.

†Additional mental health indicators were controlled in these models: a standardized summary index for stress, and fair or poor mental health (self-rating).

‡Standardized summary index.

§95% confidence intervals (CIs) in parentheses. Predictor variables for all models, in addition to those listed for physical health, mental health, and sexual/partnership experiences, included baseline controls: age, race/ethnicity, religion, marital status, and education.

Table 4 Physical and psychosocial correlates of sexual problems in preceding year among sexually active U.S. men aged 57–85

	Lacked interest in sex		Unable to achieve orgasm		Experienced pain during sex		Sex not pleasurable		Anxious about performance		Trouble maintaining or achieving erection		Climax too early	
	N	OR	N	OR	N	OR	N	OR	N	OR	N	OR	N	OR
Physical health	581		571		869		576		573		574		566	
STD ever		1 (0.4–2.3)		0.9 (0.4–2.0)		—		5.4** (2.2–13.3)		1.2 (0.5–3.1)		1.8 (0.9–3.6)		1.3 (0.6–2.7)
Treated urinary tract syndrome		1.2 (0.4–3.4)		1.7 (0.6–5.0)		0.9 (0.1–5.6)		1.2 (0.2–6.8)		1.6 (0.7–3.7)		3.7** (1.4–9.9)		0.8 (0.3–2.6)
Poor to fair health (self-rating)		1.3 (0.6–2.7)		1.4 (0.7–2.6)		2.3 (0.8–7.0)		1.3 (0.6–3.2)		1.6 (0.9–2.9)		1.9 (1.0–3.7)		0.6 (0.3–1.2)
Mental health [†]	812		798		811		809		805		806		793	
Anxiety [†]		1.4* (1.1–1.9)		0.9 (0.7–1.2)		1.2 (0.7–2.0)		1 (0.7–1.6)		1.1 (0.8–1.4)		1 (0.8–1.2)		1.1 (0.9–1.5)
Depression [†]		1.2 (0.9–1.6)		1.5* (1.1–2.0)		1.3 (0.6–2.7)		1.3 (0.8–2.1)		1.3 (1.0–1.9)		1.5** (1.1–2.1)		1.2 (0.9–1.6)
Sexual/partnership experiences	688		683		704		686		683		684		676	
Relationship satisfaction [†]		0.7** (0.5–0.9)		0.8 (0.7–1.1)		0.8 (0.4–1.4)		0.5* (0.3–0.8)		0.9 (0.7–1.2)		0.8 (0.6–1.1)		1 (0.7–1.4)
Sex frequency no more than once monthly		4.3** (2.4–7.5)		2.2** (1.3–3.7)		0.9 (0.3–2.7)		2.4** (1.3–4.2)		2.4** (1.4–4.0)		3.0** (1.9–4.9)		1.2 (0.7–2.0)
Thinks about sex less than once weekly		1.8* (1.0–3.3)		1.5 (0.9–2.7)		2 (0.6–6.9)		0.7 (0.4–1.5)		1.6 (0.9–2.7)		1.2 (0.6–2.2)		1.4 (0.8–2.5)
Masturbation at least once monthly		0.9 (0.5–1.5)		1.1 (0.7–1.9)		1.3 (0.4–4.5)		0.8 (0.3–1.8)		1 (0.6–1.6)		1.1 (0.7–1.7)		1.1 (0.7–1.6)
Any same sex activity ever		5.0** (1.9–13.5)		0.7 (0.2–2.7)				3.8 (1.0–15.0)		2.2 (1.0–5.3)		1.3 (0.4–3.7)		0.5 (0.2–1.3)

*Significant at $P < 0.05$; **significant at $P < 0.01$.[†]Additional mental health indicators were controlled in these models: a standardized summary index for stress, and fair or poor mental health (self-rating).[‡]Standardized summary index.[§]95% confidence intervals (CIs) in parentheses. Predictor variables for all models, in addition to those listed for physical health, mental health, and sexual/partnership experiences, included baseline controls: age, race/ethnicity, religion, marital status, and education.

Table 5 Psychosocial correlates of sexual problems in preceding year among sexually active U.S. women and men aged 57–85

	Lacked interest in sex			Unable to achieve orgasm			Experienced pain during sex			Sex not pleasurable			Anxious about performance			Trouble lubricating		
	N	OR		N	OR		N	OR		N	OR		N	OR		N	OR	
Women																		
Stress [†]	472	1.4*	(1.0–1.8)	450	1.4*	(1.1–1.8)	474	1.2	(0.9–1.5)	467	1.5**	(1.1–1.9)	469	1.3	(1.0–1.8)	464	1.0	(0.8–1.4)
Depression [†]	499	1.5**	(1.1–1.9)	474	1.7**	(1.2–2.3)	501	1.4*	(1.1–1.8)	493	1.8**	(1.4–2.1)	495	1.7**	(1.3–2.3)	491	1.3	(1.0–1.6)
Anxiety [†]	472	1.6**	(1.3–2.0)	450	1.7**	(1.3–2.2)	474	1.4	(1.0–1.9)	467	1.9**	(1.5–2.4)	469	1.7**	(1.1–2.5)	464	1.3	(1.0–1.6)
Poor to fair mental health (self-rating)	499	1.7	(0.9–3.2)	474	3.7**	(1.8–7.6)	501	3.1**	(1.4–6.8)	493	5.2**	(2.7–10.0)	495	2.9**	(1.4–6.1)	491	2.9**	(1.4–6.1)
Daily alcohol [‡]	499	0.4*	(0.2–0.8)	474	0.8	(0.3–1.9)	501	0.7	(0.2–2.1)	493	0.3*	(0.1–0.9)	495	0.4	(0.1–1.6)	491	0.7	(0.3–1.6)
Men																		
Stress [†]	815	1.2*	(1.0–1.5)	801	1.1	(0.9–1.4)	814	1.2	(0.8–1.9)	812	1.3	(1.0–1.8)	808	1.4**	(1.1–1.8)	809	1.2	(0.9–1.5)
Depression [†]	873	1.4**	(1.1–1.7)	858	1.4**	(1.2–1.7)	871	1.4	(0.9–2.2)	870	1.5**	(1.1–2.0)	865	1.6**	(1.2–2.1)	866	1.2	(1.0–1.4)
Anxiety [†]	816	1.5**	(1.2–1.8)	802	1.1	(0.9–1.3)	815	1.3	(0.9–1.9)	813	1.3	(0.9–1.7)	809	1.4**	(1.1–1.7)	810	1.2	(1.0–1.4)
Poor to fair mental health (self-rating)	872	1.5	(0.7–3.5)	857	1.8	(0.9–3.5)	870	1.7	(0.4–7.5)	869	2.8*	(1.2–6.6)	864	2	(0.7–5.8)	865	2.0*	(1.0–4.0)
Daily drinking [‡]	874	0.6	(0.3–1.2)	859	1.3	(0.8–2.2)	872	0.2	(0.0–1.7)	871	1.1	(0.4–3.3)	866	1.1	(0.7–1.8)	867	1.1	(0.8–1.6)

*Significant at $P < 0.05$; **significant at $P < 0.01$.

[†]Standardized summary index.

[‡]Based on average self-reported alcohol consumption over preceding 3 months.

95% confidence intervals (CIs) in parentheses. Predictor variables for all models included baseline controls: age, race/ethnicity, religion, marital status, and education.

a greater potential for endogeneity—especially with our mental health and relationship satisfaction measures—we do not report these results.

Comment

The likelihood of engaging in partnered sex declines steadily with age, particularly among women [18]—a continuation of a trend also found in the NHLS, for those 18–59 [16]. Much of this decline may be due to unobserved sexual problems, with older women and men who continue to have sex likely to be in better sexual health than those who are sexually inactive. It is noteworthy, however, that in this potentially healthier subpopulation, the age pattern suggests maintenance of sexual capacity rather than decline. Increasing biological age does not result in more sexual problems for either gender, with the sole exceptions of men's erectile and orgasmic problems, which both increase markedly with age. Indeed, in the case of men's premature ejaculation, the prevalence seems to decline with age. Rather than indicating an inevitable decline in sexual function with age, sexual problems among the elderly seem more of a response to stressors in multiple domains of life, from physical health to features of the intimate relationship.

At least with physical health, this effect seems somewhat gender differentiated. For instance, only 2 out of our 21 physical health correlations reach significance among men, while among women, 5 of the 18 associations are significant—although this small set of predictors may possibly miss many factors affecting men's sexual health more than for women. The mechanism linking poor health or other stressors with sexual problems is likely to be poor mental health—a conclusion strongly supported by our supplementary analysis (not shown), in which we use nested models to test this mediating role. The NSHAP results clearly demonstrate the consistently strong relationship of stress, anxiety, and depression, as well as poor mental health generally, with women's reports of sexual problems and the less consistent association with men's problems.

Among sexual and partnership factors, overall satisfaction in the intimate relationship has a similar negative association with both women's than men's sexual problems. These results suggest that sexual health is relational and jointly produced, rather than simply an outcome for the individual [9]—although, of course, the causal effect may run in both directions, with experiences of problems during sex with a partner lowering the

overall sense of well-being one derives from the relationship. As with our physical health measures, correlations with frequency of partnered sex also suggest a gender-differentiated pattern. Specifically, while men who lack sexual pleasure, are unable to climax, or have performance anxiety may simply lower their sex frequency, the same is not true of women.

Limitations

The NSHAP data are cross-sectional, making it difficult to establish temporal order and causal direction. The sexual problem items were all reported by the individuals experiencing them. Participants may differ in their sensitivity to and interpretation of the same sexual experiences, perhaps in ways associated with their education, race, or religion. Some of the analyses were based on small cell sizes—e.g., treated urinary tract syndrome among women, and lifetime same sex activity among men—possibly leading to unstable estimates. Perhaps most importantly, only respondents reporting any partnered sex in the preceding year (68% of all men and 42% of women) were asked about sexual problems, so that those sexually inactive over this period are excluded here. If—as it seems likely—some respondents were sexually inactive precisely because they had a sexual problem, the prevalences of sexual problem presented in this article are underestimates of the “true” prevalences, and our results biased. Specifically, both excluded women and men in our sample were older, more likely to be in poor physical and mental health, and less educated than those included. Each of these factors is correlated with increased reports of sexual problems among the sexually active.

Conclusion

This study provides the first comprehensive, population-based analysis of sexual problems among older women and men in the United States. The NSHAP results indicate that sexual problems among the elderly are not an inevitable consequence of aging, but instead are responses to the presence of stressors in multiple life domains. Moreover, this impact may partly be gender differentiated, with older women's sexual health more sensitive to their physical health than is true for men. The results point to a need for physicians who are treating older adults experiencing sexual problems to take into account their physical

health, as is usually done. However, it is also important to consider their mental health and their satisfaction with their intimate relationship in making any assessment.

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Corresponding Author: Edward O. Laumann, PhD, Department of Sociology and Population Research Center, University of Chicago, Chicago, IL 60637, USA. Tel: (773) 702-8691; Fax: (773) 702-4607; E-mail: e-laumann@uchicago.edu

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