Sexual Satisfaction and Risk of Disability in Older Women

Graziano Onder, M.D., Ph.D.; Brenda W. J. H. Penninx, Ph.D.; Jack M. Guralnik, M.D., Ph.D.; Heather Jones, M.D.; Linda P. Fried, M.D., M.P.H.; Marco Pahor, M.D.; and Jeff D. Williamson, M.D., M.P.H.

Background: Most studies evaluating sexuality in older adults have focused on men, and relatively little research has evaluated the relationship between sexual satisfaction and health outcomes in older women. The aims of this study were to describe correlates of sexual satisfaction in community-dwelling older women with moderate to severe levels of disability and to examine the association of sexual satisfaction with progression of disability in this population.

Method: A total of 980 moderately to severely disabled women aged 65 years or older who had participated in The Women's Health and Aging Study entered this study. Baseline evaluations took place from 1992 through 1995. Participants rated their satisfaction with their level of sexual activity on a 0-to-10 scale. Women scoring ≥ 8 were considered sexually satisfied. The onset of new severe disability was determined by semiannual assessments, over 3 years, of disability in performing activities of daily living (ADLs) and walking across a room.

Results: Of 203 (49.8%) women living with a spouse, 101 were satisfied with their level of sexual activity. In this group, older age, white race, and higher level of physical function were independent predictors of sexual satisfaction. In addition, among women living with a spouse, higher sexual satisfaction was associated with a significantly decreased risk for incident disability in performing ADLs (hazard ratio [HR] = 0.58, 95% confidence interval [CI] = 0.36 to 0.94) and walking across a small room (HR = 0.38, 95% CI = 0.18 to 0.79). Among women not living with a spouse, the response on the sexual satisfaction question showed different determinants and was not associated with disability risk.

Conclusion: Sexual satisfaction in community-dwelling, older, disabled women living with their spouse is associated with reduced risk for subsequent new severe disabilities.

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Received Jan. 16, 2003; accepted March 20, 2003. From the Sticht Center on Aging, Section on Gerontology and Geriatrics, Department of Internal Medicine, School of Medicine, Wake Forest University, Winston-Salem, N.C. (Drs. Onder, Penninx, Jones, Pahor, and Williamson); Medical Center for the Aging, Catholic University of the Sacred Heart, Rome, Italy (Dr. Onder); the Epidemiology, Demography, and Biometry Program, National Institute on Aging, Bethesda, Md., (Dr. Guralnik); and the Departments of Medicine and Epidemiology, The Johns Hopkins Medical Institutions, Baltimore, Md. (Dr. Fried).

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Corresponding author and reprints: Graziano Onder, M.D., Dipartimento di Geriatria, Centro Medicina dell'Invecchiamento–CEMI, Università Cattolica del Sacro Cuore, Policlinico A. Gemelli, L.go Francesco Vito 1, 00139 Rome, Italy (e-mail: graziano_onder@rm.unicatt.it).

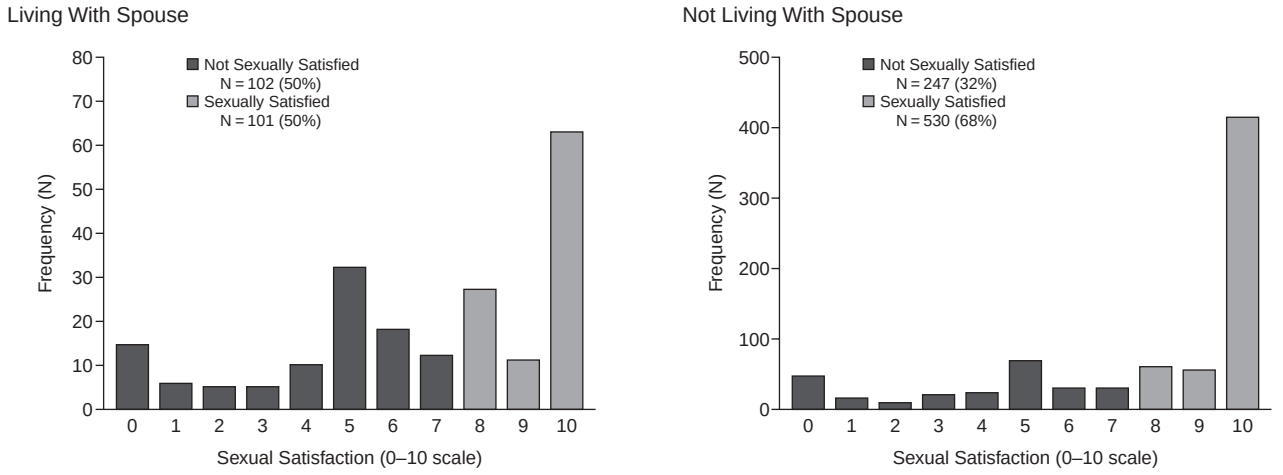
Seventy percent of healthy 70-year-olds report having sexual intercourse at least once per week.[1] Several longitudinal studies have assessed the relationship between sexuality and health-related outcomes among older adults.[2,3] In the Duke Longitudinal Study of Aging, frequency of sexual intercourse was shown to be inversely related to mortality in men, and enjoyment of intercourse was inversely associated with mortality among women.[4] These findings are compatible with a perception that the quantity of sexual activity is of more importance to men, while the quality of sexual activity is of greater importance among women.[5,6]

However, most studies evaluating sexuality in older adults have focused on men, and relatively little research has evaluated the relationship between sexual satisfaction and health outcomes in older women. The aims of this study were to describe correlates of sexual satisfaction in community-dwelling older women with moderate to severe levels of disability and to examine the association of sexual satisfaction with progression of disability in this population.

METHOD

We utilized data from the Women's Health and Aging Study,[7,8] a 3-year longitudinal study enrolling 1002 community-dwelling women aged 65 years or older from 1992 to 1995 who reported difficulty in at least 2 of 4

Figure 1. Distribution of Baseline Scores on a 0-to-10 Scale for Sexual Satisfaction Among Older Disabled Women



functional domains (mobility and exercise tolerance, upper extremity function, basic self care, and higher functioning tasks of independent living) and scored > 17 on the Mini-Mental State Examination (MMSE).[9] Details of the study design and characteristics of the population are reported elsewhere.[7,8]

Measures

Sexual satisfaction. As a part of the Quality of Life (QOL) scale,[10] participants were asked "How satisfied are you with your level of sexual activity or lack of sexual activity?" Responders indicated their level of satisfaction on a scale ranging from 0 (extremely dissatisfied) to 10 (extremely satisfied). This question had already been used in a previous study and showed a positive association between sexual activity and level of satisfaction in a cohort of elderly people.[11] Among the 980 participants responding to the question, those scoring ≥ 8 were considered sexually satisfied. Since the answer to this question can have different meanings depending on the presence of a partner, we divided the population between women living with a spouse (N = 198) and women not living with a spouse (N = 782). Five unmarried participants living with a partner were excluded from this latter group and included in the group of women living with a spouse. The frequency distribution of the score among women living with a spouse and those not living with a spouse is shown in Figure 1.

Disability outcomes. Patients were examined at home at baseline and every 6 months for 3 years. At baseline and at the 6 semiannual follow-up assessments, the presence of disability in various domains of functioning was measured. For the present study, we examined 2 outcomes: (1) disability in performing activities of daily living (ADLs), including bathing, dressing, eating, transferring from bed to chair, and using the toilet and (2) disability walking across a room (mobility disability). For both outcomes, disability was considered present when participants reported a lot of difficulty or inability to perform that specific task. Only subjects who did not report this level of disability at baseline were included in analyses assessing effect of sexual satisfaction on onset of new disability.

Covariates. Sociodemographic measures included age, race, years of education, and income level. Alcohol consumption was defined as self-reported regular use of any alcoholic beverage. For the activities considered in the 2 disability outcomes, the baseline level of difficulty was measured by reports of no (0), a little (1), or some (2) difficulty with performing that specific activity. Baseline physical performance was measured by a short battery of 3 tests: walking a 4-meter course, 5 repetitions of standing up and sitting down from a chair, and standing balance tests. Using cutpoints derived from the Established Populations for Epidemiologic Studies of the Elderly, we constructed a 0 (unable to do test) to 4 (best performance) scale for each of the 3 tests and a 0-to-12 summary performance score (SPS).[12]

Baseline physical activity was measured by summarizing responses to several common activities in older women. We created 3 categories, as previously described[13]: extremely physically inactive, minimally physically active, and moderately physically active. A score ranging from 0 to 10 assessing overall QOL was computed based on the mean of 19 out of 20 items of the QOL scale[10] (the item assessing sexual satisfaction was not included).

The presence of 17 major chronic conditions was ascertained at baseline using algorithms.[8] Cognitive func-

tion and depressive symptoms were assessed using the MMSE[9] and the Geriatric Depression Scale (GDS),[14] respectively.

Statistical Analyses

Baseline characteristics of sexually satisfied and not sexually satisfied participants were compared using analysis of variance for normally distributed variables, nonparametric Kruskal-Wallis H tests for skewed variables, and chi-square analyses for dichotomous variables. To identify factors independently associated with sexual satisfaction among women living with a spouse (N = 203) and those not living with a spouse (N = 777), variables associated with sexual satisfaction at $p \leq .10$ in the univariate analyses in each of these 2 groups were simultaneously entered into separate age-adjusted logistic regression models. Cox's proportional hazards regressions were fitted to evaluate the effect of sexual satisfaction on time to onset of new disability. All subjects who reported that specific disability at baseline were excluded from the analyses. The first report of disability at follow-up was considered as the event of new disability regardless of disability status reported in subsequent follow-up interviews. Those surviving with no evidence of new disability were censored at 3 years, those dying with no evidence of new disability were censored at the time of their deaths, and those lost to follow-up were censored at their last interview. Analyses are adjusted for age, race, body mass index, stroke, diabetes, heart disease, osteoarthritis, level of physical activity, GDS score, MMSE score, baseline physical performance score, and baseline level of difficulty in the outcome variable. In additional analyses, to evaluate whether the association between sexual satisfaction and disability was independent from overall life satisfaction, the variable identifying QOL was entered in the models.

RESULTS

Mean ± SD age of the 980 participants was 78.8 ± 8.0 years; 697 (71.1%) were white, and 203 (20.7%) were living with their spouse. Compared with other participants, women living with a spouse were younger (74.3 ± 6.2 years vs. 79.9 ± 8.0 years, $p < .001$), more likely to be white (81.3% vs. 68.5%, $p < .001$), and presented a higher MMSE score (27.1 ± 2.7 vs. 26.2 ± 3.1, $p = .001$) and a better SPS (7.2 ± 3.3 vs. 5.5 ± 3.2, $p = .001$) at baseline. One hundred one women (49.8%) living with a spouse were satisfied with their level of sexual activity, compared with 530 women (68.2%) not living with a spouse ($p \leq .001$). Baseline characteristics of the population according to sexual satisfaction are listed in Table 1. Among women living with a spouse, older age, white race, low GDS score, decreasing comorbidity, absence of diabetes, and baseline level of physical performance were associated with higher sexual satisfaction ($p \leq .10$) in the univariate analysis. Entering these variables in a multivariate logistic regression model, increasing age (odds ratio [OR] = 1.07 for each year increment, 95% confidence interval [CI] = 1.02 to 1.13), white race (OR = 2.42, 95% CI = 1.06 to 5.57), and higher baseline level of physical performance (SPS score of 5–7 vs. 0–4, OR = 2.69, 95% CI = 1.09 to 6.69; SPS score of 8–12 vs. 0–4, OR = 2.14, 95% CI = 0.88 to 5.22) were independent predictors of sexual satisfaction. White race (OR = 1.84, 95% CI = 1.28 to 2.64), alcohol consumption (OR = 0.52, 95% CI = 0.34 to 0.80), and higher levels of depressive symptoms on the GDS (OR = 0.94 for each point increment, 95% CI = 0.91 to 0.97) were independently associated with lower sexual satisfaction among women not living with a spouse.

Table 2 shows the cumulative percentages of the onset of specific new disabilities over 3 years in women who were living with a spouse or partner and who did not have these disabilities at baseline. Of the 77 sexually satisfied women without ADL disability at baseline, 51.9% developed disability in ADLs during follow-up. This percentage was higher (67.1%) among the 73 not sexually satisfied women without baseline ADL disability. After adjusting for potential confounders, this latter group presented a significantly higher risk of developing new ADL disability over 3 years, compared with sexually satisfied participants (Figure 2). Similarly, in both age-adjusted and fully adjusted models, the onset of new mobility disability was significantly lower in sexually satisfied women, compared with not sexually satisfied women (Figure 2 and Table 2).

Among women living with a spouse, the sexually satisfied had a better QOL score than those not sexually satisfied (mean QOL score = 7.9 vs. 6.8, $p < .001$). To explore whether the effect of sexual satisfaction was explained by an overall lower QOL, we conducted Cox proportional hazard analyses in which we included both sexual satisfaction and QOL. In these models, the inverse association between sexual satisfaction and new disabilities was still persistent (Table 2), and overall QOL score did not significantly increase the risk of ADL or mobility disability (hazard ratio [HR] = 0.97 for each point increment, 95% CI = 0.77 to 1.23; HR = 1.00 for each point increment, 95% CI = 0.75 to 1.34, respectively).

Among participants not living with a spouse, no difference could be observed in the incidence of new disability according to sexual satisfaction. In this group, 63.9% of sexually satisfied women without baseline disability developed new ADL disability and 36.6% developed mobility disability, compared with 64.3% and 37.9% of not sexually satisfied women, respectively. The fully adjusted risks of sexual satisfaction for the onset of new ADL and mobility disability were 0.97 (95% CI = 0.77 to 1.22) and 1.09 (95% CI = 0.83 to 1.44), respectively.

Table 1. Baseline Characteristics of Disabled Older Women According to Marital Status and Sexual Satisfaction

	Sexual Satisfaction					
	Living With Spouse			Not Living With Spouse		
Variable	Satisfied (N = 101)	Not Satisfied (N = 102)	p Value	Satisfied (N = 530)	Not Satisfied (N = 247)	p Value
Age, mean ± SD, y	75.2 ± 6.6	73.3 ± 5.7	.029	80.0 ± 7.9	79.7 ± 8.3	.687
White race, %	87.1	75.5	.034	71.9	61.1	.011
Alcohol consumption,%[a]	21.8	15.7	.266	12.5	19.0	.015
Current smokers, %	6.9	9.8	.460	12.1	13.4	.614
Income level, %			.995			.373
< $6000	8.2	8.6		21.6	25.5	
$6000–$9999	10.6	10.8		38.1	33.2	
≥ $10,000	81.2	80.6		40.3	41.4	
Education, mean ± SD, y	10.5 ± 3.5	10.4 ± 3.2	.842	10.0 ± 6.2	9.3 ± 3.8	.120
Body mass index, %			.597			.417
< 18.5 kg/m^2	2.1	4.4		4.5	6.1	
18.5–24.9 kg/m^2	22.1	18.7		27.9	30.7	
≥ 25 kg/m^2	75.8	76.9		67.6	63.2	
No. of adjudicated diseases, mean ± SD	2.1 ± 1.3	2.4 ± 1.3	.073	2.1 ± 1.4	2.1 ± 1.4	.621
Stroke, %	7.9	3.9	.227	6.0	9.7	.065
Diabetes, %	14.9	25.5	.059	14.5	16.2	.545
Heart disease, %	18.8	21.6	.625	21.7	23.9	.496
Osteoarthritis, %	75.2	78.4	.591	77.7	81.4	.247
Physical activity, %			.478			.487
Inactive	10.1	8.2		16.4	18.2	
Minimally active	47.5	40.8		53.6	55.9	
Moderately active	42.4	51.0		30.0	25.8	
GDS score, mean ± SD	6.7 ± 5.2	8.0 ± 5.4	.099	7.4 ± 5.3	9.4 ± 6.1	< .001
MMSE score, mean ± SD	27.2 ± 2.6	26.9 ± 2.7	.419	26.4 ± 2.9	26.0 ± 3.3	.090
Number of drugs, mean ± SD	7.4 ± 4.4	7.7 ± 4.4	.640	6.5 ± 3.9	6.8 ± 4.1	.332
Estrogen replacement therapy, %	8.9	11.8	.504	6.4	8.5	.291
Baseline summary performance score, %			.066			.513
Poor (score of 0–4)	15.8	28.4		39.4	43.7	
Intermediate (score of 5–7)	29.7	20.6		28.5	27.1	
Good (score of 8–12)	54.5	51.0		32.1	29.1	
Baseline ADL disability, %[b]	23.8	28.4	.449	34.6	29.6	.164
Baseline mobility disability, %[c]	9.9	10.9	.818	12.4	18.6	.021

[a]Defined as self-reported regular use of any alcoholic beverage.
[b]ADL disability = a lot of difficulty/unable in 1 or more ADLs.
[c]Mobility disability = a lot of difficulty/unable to walk across a room.
Abbreviations: ADL = activity of daily living, GDS = Geriatric Depression Scale, MMSE = Mini-Mental State Examination.

DISCUSSION

This study shows that, among disabled older women living with their spouse, satisfaction with the level of sexual activity is associated with a reduced onset of severe disabilities. Among women living with a spouse, predictors of sexual satisfaction included older age, white race, and overall physical performance. This association was not confirmed in women not living with a spouse. However, in this latter group, greater satisfaction with level of sexual activity was associated with white race, low alcohol consumption, and lower depression.

The differential results reported by those living with and without a partner may be due to a different definition of sexual satisfaction between women living with and without a spouse. Prior research has shown that, among women without a spouse, sexual satisfaction probably represents a successful adaptation to the loss of physical affection and sexual activities associated with a spousal relationship.[15] This hypothesis may explain the high prevalence of sexual satisfaction in this group, and is consistent with the finding of an inverse association observed between sexual satisfaction and depressive symptoms (expressed by the GDS). Similarly, the inverse association between alcohol use and sexual satisfaction, observed in those without a spouse or partner, may reflect the strong relationship existing between emotional distress and drinking behavior.[16]

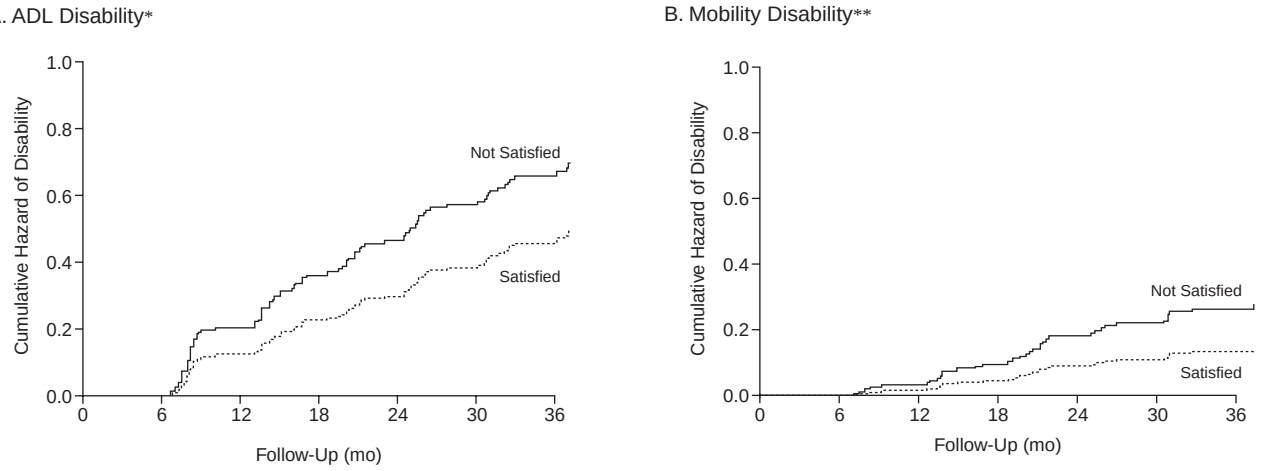
Among women living with a spouse, sexual satisfaction may be associated with factors that protect against subsequent adverse health outcomes. First, among married women, sexual satisfaction is highly related to sexual activity,[11] which, in turn, can be considered as a form of exercise equivalent to leisurely walking or strolling[17] and may therefore reduce the risk of disability.[18] Second, positive emotions, such as those associated with satisfaction with sexual activity, can play an important role in preventing health decline and adverse outcomes among older adults.[19] A previous study conducted in this population showed that emotional vitality, defined as having a high sense of personal mastery, being happy, and having low depressive symptomatology and anxiety, was associated

Table 2. Hazard Ratios (HRs) and 95% Confidence Intervals (CIs) of Incident ADL and Severe Mobility Disability Among Women Living With a Spouse (N = 203)[a]

Sexual Satisfaction	N	Participants Developing Disability N (%)	Fully Adjusted HR (95% CI)[b]	Fully Adjusted[b] + QOL-Adjusted[c] HR (95% CI)
ADL disability[d]				
Not satisfied	73	49 (67)	…	…
Satisfied	77	40 (52)	0.58 (0.36 to 0.94)	0.60 (0.36 to 0.99)
Mobility disability[e]				
Not satisfied	87	27 (31)	…	…
Satisfied	91	16 (18)	0.38 (0.18 to 0.79)	0.38 (0.17 to 0.82)

[a]Hazards were calculated from Cox's proportional hazard models among women without that disability at baseline.
[b]Analyses were adjusted for age, race, body mass index, stroke, diabetes, heart disease, osteoarthritis, physical activity, GDS score, MMSE score, baseline physical performance score, and baseline level of difficulty in the outcome variable.
[c]Variable identifying QOL was entered in the model.
[d]ADL disability = a lot of difficulty/unable in 1 or more ADLs.
[e]Mobility disability = a lot of difficulty/unable to walk across a room.
Abbreviations: ADL = activity of daily living, GDS = Geriatric Depression Scale, HR = hazard ratio, MMSE = Mini-Mental State Examination, QOL = quality of life. Symbol: … = reference group.

Figure 2. Age-Adjusted Cumulative Hazard of (A) Activities of Daily Life (ADL) Disability and (B) Mobility Disability According to Sexual Satisfaction Among Women Living With a Spouse (N = 203)[a]



[a]Hazards were calculated from Cox's proportional hazard models among participants without that disability at baseline.
*p = .011.
**p = .022.

with a reduced risk of disability and mortality.[20] Persons experiencing positive emotions may have healthier lifestyles and better adherence to treatment regimens and may be more likely to respond to their physical limitations by using strategies that maintain their physical function.

Third, sexual satisfaction in this sample of older disabled women may indicate a successful adaptation of an individual's evolving view of an acceptable or "feasible" level of sexual activity. Subjects not sexually satisfied may have retained inaccessible goals and therefore were striving for a higher level of sexual activity than was feasible, resulting in increasing emotional distress. The fact that older persons may cope more successfully with transforming inaccessible goals into accessible ones may explain the association between baseline sexual satisfaction and advanced age we observed among women living with a spouse.[21]

Finally, although we adjusted all analyses for objectively measured baseline physical performance, it is still possible that the absence of sexual satisfaction is an indicator of poor functional status. Indeed, in our sample, baseline physical performance was inversely related to sexual satisfaction, probably reflecting reduced sexual activity as a consequence of functional limitations or chronic conditions that cause those limitations.[11]

While these results do not shed light on whether the participants associated satisfaction with a "high" or "low" frequency of sexual activity, the high percentage of women (50%) living with a partner and reporting low levels of satisfaction indicates that this is an important aspect of overall life satisfaction, even for older women with

moderate to severe disability.[22] Physicians and other health care providers should be educated to inquire about potential barriers to a satisfying sex life in community-dwelling older women with chronic disease-related disability and should provide assistance and referral to older couples struggling with loss of sexual intimacy as a result of disabling conditions. In summary, this is, to our knowledge, one of the first studies evaluating the association of sexual satisfaction with health outcomes in community-dwelling older women with physical disability. Further studies are needed to confirm the results of this article and to examine whether interventions aimed at preserving sexual intimacy are effective in maintaining emotional vitality and preserving physical function in older women experiencing early disability.

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