



# Predictors of Quality of Life, Sexual Intercourse, and Sexual Satisfaction among Active Older Adults

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## ABSTRACT

**Background:** Relatively little is known about the sexual behaviors of older people, and the relationship between quality of life and sexuality has not been fully explored. **Purpose:** The purpose of this study was to investigate the impact of sociological, cultural, and psychological factors to further explain variance beyond biological changes that influence participation in sexual intercourse, sexual satisfaction, and overall quality of life. **Methods:** Data were collected using a mixed-mode approach to optimize participant response and coverage. Residents of a large active retirement community served as the study participants. **Results:** Logistic regression identified a set of biopsychosocial variables which significantly distinguished between those who participate and do not participate in sexual intercourse. Multiple regression procedures identified sets of variables that significantly predicted sexual satisfaction and quality of life. **Discussion:** Overall findings add to the existing body of literature on aging, sexual health, and quality of life. **Translation to Health Education Practice:** Health professionals should develop interventions that provide education about sexuality to enhance sexual satisfaction and quality of life among community dwelling older adults.

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## BACKGROUND

The population growth rate for older adults has rapidly exceeded the growth rate of the United States population as a whole. The National Center for Health Statistics (NCHS)<sup>1</sup> reports that the older population in 2030 is projected to be twice as large as their counterparts in 2000, growing from 35 million to 71.5 million, representing nearly 20% of the national population. This shift of age demographics increases the importance of better understanding factors that contribute to the adaptation and well-being of the older population. One of the most important factors contributing to quality of life among older adults is sexuality.<sup>2,3</sup> However, according to recent literature, little is known about the sexual behaviors and sexual functioning of older people,<sup>4</sup> and the relationship between quality of life and sexuality has not been fully explored.<sup>3</sup>

Quality of life is a subjective and complex concept that can be measured using multiple

dimensions. Considerable research on quality of life has been conducted among older adults.<sup>3,5-8</sup> Factors identified in the literature that influence older adults' quality of life include age, gender, education, marital status, health status, physical functioning, social relationships, psychological well-being, and sexual activity. Sexuality and sexual activities have not been frequently investigated variables in studies of quality of life among older adults. Sexuality has been defined as a multidimensional and holistic phenomenon with biological, emotional, psychological, intellectual, spiritual, and sociocultural components.<sup>9,10</sup> Sexuality is a major aspect of intimacy and incorporates components such as sexual desire, activity, function, attitudes, beliefs, values about identity, and self-concept.

Much of the previous literature is based on a biological or medical perspective, which asserts that sexual behaviors, desire, and satisfaction are reduced and eliminated

with age due to physical transformations, hormonal changes, and chronic illnesses.<sup>11</sup> Many older adults who have sexual relations benefit from an important source of reinforcement and pleasure. It has been reported that sexuality helps preserve psychological and physical well-being, which indirectly contributes to the reduction in physical and mental health problems, health

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care costs, and may potentially increase life satisfaction.<sup>12-14</sup> A common misconception is that with age all sexual encounters cease and people become nonsexual beings. Empirical evidence suggests that physiological changes affect the intensity, frequency, and the quality of sexual response for both men and women; however, the capacity to enjoy sexual activities is not altered with age.<sup>15,16</sup>

## PURPOSE

There is a paucity of empirical research which combines factors that affect older adults' experience of changes in sexuality and life quality in a multidimensional, or biopsychosocial fashion. Normal age-related physiological changes are not as dramatic as many expect, and biological changes alone are unlikely to explain dramatic variation in sustaining dimensions of human functioning with age.<sup>17</sup> Consequently, there is a need to identify factors beyond the biological changes that influence the potentialities of sexual health and life quality associated with aging. Such information may be useful to further understand the prerequisites necessary to create conditions that will foster successful aging for our rapidly growing older adult society. Thus, the purpose of this study was to: (1) identify selected biopsychosocial factors that most uniquely contribute to distinguishing between participation and non-participation in sexual intercourse; and (2) determine the extent to which sexual satisfaction and quality of life are associated with selected biopsychosocial variables.

## METHODS

### Participants

The proportion of the population age 65 and older in the United States varies by state. These percentages are affected by state fertility and mortality rates, as well as the number of older and younger people who migrate to and from different states. In 2002, the state of Florida reported the highest percentage of adults age 65 and older at 17%, and several counties reported over 30%.<sup>18</sup> As a result, a number of large retirement communities exist in central and southern Florida, which offer a sizable concentration of adults age

55 and older. One of the nation's largest active 55 and older retirement communities located in central Florida was selected as the study population. Participants in the study were persons age 55 and older who were residents of an active retirement community. Participants responded to a mail survey or were patrons of a central Florida flea market who agreed to participate upon receiving a verbal invitation.

### Instrumentation

A questionnaire was developed to explore the values, attitudes, beliefs, and behaviors of a sample of older adults. The majority of survey items and scales were adopted from items used and tested in previous research. National sexuality experts ( $n = 2$ ) contributed to the instrument development. The survey was pilot tested on respondents ( $n = 5$ ) who were comparable to the selected population on age, gender, and ethnicity. Based upon feedback from these respondents, a minimal number of revisions to the instrument were made. Following are selective measurements included in the questionnaire.

### Demographic Information

The following demographic variables were assessed: residential status at an active retirement community, age, gender, marital status, living arrangements, education, ethnicity, income, sexual orientation, and religiosity.

### Body Image and Sexual Desirability

Body image was measured using a 10-item scale.<sup>19</sup> Potential responses for each item ranged from "1-strongly disagree" to "4-strongly agree." Sexual desirability was investigated using two questions: "How would you rate your sexual desirability?" and "If your sexual partner(s) were to rate your sexual desirability, what would your rating be?"<sup>20</sup> Potential responses ranged from "4-much above average" to "0-much below average."

### Frequency of Self/Partner Orgasm

Orgasm frequency was measured using two items: "When you engage in sexual activity with a partner how often does this result in at least one orgasm for you?" and

"When you engage in sexual activity with a partner how often does this result in at least one orgasm for your partner?"<sup>21,22</sup> For the present study frequency of orgasm was assessed using a six-point Likert Scale ranging from "5-greater than once a day" to "0-never/rarely."

### Productive Activity and Social Activity

Productive activity was evaluated using the following three items: "How often do you engage in unpaid or paid community work or employment?" "How often do you participate in productive activities (such as gardening or cleaning)?" and "How often do you cook meals at home?"<sup>23</sup> Potential responses for each item ranged from "0-never" to "4-daily." Social activity was evaluated using the following three items: "How often do you engage in active leisure (such as golf, swimming, tennis, or dancing)?" "How often do you participate in social groups, organized programs, or clubs (including playing cards or bunko)?" and "How often do you go to the movies, restaurants, social events, or shopping?"<sup>23</sup> Potential responses for each item ranged from "0-never" to "4-daily."

### Relationship Satisfaction

Three questions assessed participant satisfaction with non-sexual aspects of their relationship. Questions measuring relationship satisfaction included: "My partner and I share with each other our goals, dreams, plans, thoughts, and feelings," "I have a great deal of respect for the person who is my partner," and "My partner is a valued companion in recreational activities."<sup>21,22</sup> Potential responses for each item ranged from "1-strongly disagree" to "4-strongly agree."

### Sexual Attitudes

Attitudes toward aging and sexuality were measured using a 7-item scale. Questions measuring sexual attitudes included "Sexual activity is important to my quality of life," "Sexual activity is a critical part of a good relationship," "Sexual activity is a duty to one's partner," "Sex becomes less important to people with age," "I do not particularly enjoy sex," "I would be happy never having sex again," and "Sex is only for younger people."<sup>21</sup>



Potential responses for each item ranged from “1-strongly disagree” to “4-strongly agree.”

### *Sexual Satisfaction*

An 11-item scale was included to measure sexual satisfaction. Questions measuring sexual satisfaction included: “I am satisfied with my sexual partners,” “I have satisfying orgasms,” “I have good communication with my partner about sex,” “I am satisfied with my variety of sexual positions and activities,” “I am pleased with my frequency of sexual activity,” “I am pleased with my intensity of sexual activity,” “My partner makes me feel sexually desirable,” “I am sexually attracted to my sexual partner,” and “My partner makes it clear I provide him/her with sexual pleasure.”<sup>21</sup> Potential responses for each item ranged from “1-strongly disagree” to “4-strongly agree.”

### *Sexual Self-Confidence*

A 6-item scale measured Sexual Self-Confidence (SSC). Questions measuring sexual self-confidence included “I am confident I can enjoy spontaneous sexual activity,” “I feel great about my sex life,” “I am confident I can have sex when the mood is right,” “I feel very comfortable about my sexual abilities,” “I am able to have sex like I used to,” and “It is very easy to have fulfilling sexual intercourse.”<sup>24</sup> Potential responses for each item ranged from “1-strongly disagree” to “4-strongly agree.”

### *Factor Analysis*

Construct validity was examined by performing principal component factor analysis on all subscales included in the testing instrument. Separate factor analyses were conducted for each subscale under investigation. Factor-based scores were obtained from variables that demonstrated meaningful loadings for each component under examination. Factor loading subscales ranged from .61 to .99, indicating that the magnitudes for every construct under investigation were strong ( $> .60$ ).

### *Reliability Measures*

Reliability coefficients for internal consistency of the instrument subscales were determined using Cronbach's alpha calculations.

For the present study, reliability estimates ranged from  $\alpha = .35$  to  $\alpha = .98$ . Out of the 19 subscales, 16 produced reliability coefficients greater than  $\alpha = .60$ . Three subscales utilized in the data analyses demonstrated lower reliability coefficients [productive activity ( $\alpha = .35$ ), social activity ( $\alpha = .42$ ), and health status ( $\alpha = .58$ )].

## **PROCEDURES**

A cross-sectional research design was employed for the investigation. The compilation of data involved two separate modes of collection. A mixed-mode approach was performed to optimize participant response and coverage. Based on the purpose of the study, only respondents who indicated current residential status at an active retirement community were included in the investigation. All retirement community residents were eligible to participate. Return of the completed questionnaire was taken as consent to participate in the investigation. Institutional Review Board (IRB) approval was obtained prior to the collection of data.

### *Data Collection Method One*

A central Florida flea market was chosen for a data collection site due to its proximity to one of the largest active retirement communities in the nation. The researchers arranged to have a booth at the market from which to recruit study participants. Surveys were distributed during a three-day data collection effort.

### *Data Collection Method Two*

A random sample of a large central Florida retirement community was obtained through a mail-out data collection strategy. Resident names and addresses were acquired from a phone book and verified using Yahoo People Search. The potential sample for the mail-out was  $n = 1500$ .

Research packages for the mail-out included a survey cover letter that explained the purpose and importance of the study and requested the potential respondent's participation. To ensure random selection, the cover letter provided a request for the person in the household with the next upcoming birthday to complete and return the survey.

The questionnaire was sealed in a second envelope with an outside label printed with the message: “Please do not open until reading the cover letter.” This procedure allowed for those whom the investigation might have offended to discard the envelope without exposure to the questionnaire. Participants who voluntarily completed the survey returned it via a postage-paid, pre-addressed envelope. As a way to thank respondents and potentially increase participation, a free summary report of the research findings was offered upon request to all those who participated in the study. To enhance response rates, researchers attempted to contact, by phone, the persons to whom the survey was to be mailed. During the week of the survey mail-out, persons who were actually contacted were told about the study and encouraged to participate. Less than half of the people in the mail-out sample were contacted.

### *Data Analyses*

All statistical procedures were performed using Statistical Analysis Systems (SAS). Chi-square was used to examine independence of data collection methodology relative to selected demographic variables. Principal components analysis confirmed the construct validity of all subscales. Cronbach's alpha calculations determined the reliability coefficients for the internal consistency of all subscales. Data were analyzed using descriptive analyses, which produced frequency distributions of responses on every item. Pearson product-moment correlation coefficients were calculated to identify the existence of relationships between variables. Logistic regression procedures were run to identify selected biopsychosocial factors that uniquely contributed to distinguishing between participation and non-participation in current sexual intercourse. Multiple regression analyses determined the extent to which sexual satisfaction and quality of life are associated with selected biopsychosocial factors. All data analyses were analyzed by gender with a level of significance set at  $p < 0.05$ .

## **RESULTS**

### *Comparison of Data Collection Methods*

Data were collected using a mixed-mode



approach to optimize participant response and coverage. While different mode designs are often required to capture sampled units from each frame, there is the potential for bias resulting from method effects. To examine differences in responses by mode of data collection, chi-square analyses were performed to evaluate the demographic variables of marital status, education, ethnicity, household income, religious attendance, religious feeling, and health status. Due to the low number of observations in each cell, categories of “divorced” and “widowed” were combined to measure marital status. Additionally, “less than high school” and “high school diploma” as well as “some college” and “undergraduate degree” were combined to assess education. Due to the low number of non-white participants, ethnicity was dichotomized to measure white versus non-white.

Results of the chi-square analyses demonstrated that all selected demographic variables were statistically independent of the data collection methodology. Due to the lack of statistical difference in responses on the selected demographic variables by data collection method, the market data set and the mail-out data set were combined for all subsequent analyses.

### *Sample Characteristics*

The study sample for the flea market was  $n = 94$ . Forty-seven percent ( $n = 44$ ) of the participants were eliminated from the analyses due to non-residential status at an active retirement community, leaving  $n = 50$  participants for inclusion in the study. One hundred seventy-two residents of a central Florida retirement community returned usable questionnaires from the original mail-out of  $n = 1500$ , which resulted in an 11% response rate. Mailing labels placed outside the envelopes were the only identification of participants. Consequently, it was not possible to do a second mailing to non-respondents.

The total number of participants included in the study was  $N = 222$ , comprised of  $n = 95$  women (43%) and  $n = 127$  men (57%). The sample ranged in age from 55 to 89, with a mean age of 68 ( $SD = 7.4$ ). The

breakdown of age by cohort follows: 55-64 ( $n = 64, 29\%$ ), 65-74 ( $n = 112, 50\%$ ), 75+ ( $n = 46, 21\%$ ). The majority of participants were white (96%), married (75%), and lived with their spouse or partner (76%). Nearly 30% of the sample indicated earning a graduate degree, and over 30% reported an annual household income of at least \$55,000.

Relative to sexual health variables, a considerable percentage (81% of women, 88% of men) believed that sexuality is typically a lifelong need. Interestingly, 93% of both men and women agreed that sexuality in older people has beneficial effects, and 66% of women and 79% of men indicated that sexual activity is a critical part of a good relationship. Moreover, 59% of women and 73% of men agreed, or strongly agreed, that sexual activity was important to their overall quality of life. The majority of respondents reported never being treated for a sexually transmitted infection (STI) (93% of women, 87% of men). However, only 11% of women and 10% of men indicated that their health care provider inquired about their sexual behaviors or performed a sexual risk assessment. A greater percentage of men than women (28% vs. 19%, respectively) reported that they, or their partner, are current users of sexual performance enhancing medication(s).

Satisfaction with overall quality of life was high among the respondents (97% of women, 90% of men). The majority of participants reported their physical health status as good, very good, or excellent (88% of women, 94% of men). Most of the respondents reported their mental health status as good, very good, or excellent (98% of women, 96% of men). The majority of men (70%) and women (72%) indicated that they currently take prescription medication(s) for an illness. The four most frequently reported chronic health conditions were: high cholesterol, high blood pressure, arthritis, and heart condition.

### *Logistic Regression*

To determine whether biological, sociological, cultural, and psychological variables could distinguish between those who had engaged in sexual intercourse in the past

month and those who had not, a logistic regression was conducted for both women and men. These analyses also identified the relative risk and confidence intervals associated with each study variable. The logistic regression procedure was performed with current participation in sexual intercourse as the dependent variable. An initial logistic regression, which included all independent variables, was performed for both women and men. Based upon the limited number of men and women respondents, the maximum number of variables were included in a best-fit logistic regression analysis for both sexes. Variables selected were based upon: low Akaike Information Criterion (AIC), low Bayesian Information Criterion (BIC), adjusted  $R^2$ , percent concordant, and 95% confidence intervals for the proportional odds ratios given the other predictors in the model.

### *Participation in Sexual Intercourse*

Results from the logistic regression identified a 3-item model that was predictive of current sexual intercourse for women [ $X^2 = 18.43, p < 0.0005$ ]; percent concordant = 83%,  $R^2 = .40$ ]. The variables that made a statistically significant contribution to the model were: sexual self-confidence ( $p < 0.02$ ) and social activity ( $p < 0.03$ ). Results from the logistic regression indicated a 5-item model was statistically predictive of current participation in sexual intercourse for men [ $X^2 = 55.95, p < 0.0001$ ]; percent concordant = 93%,  $R^2 = .67$ ]. The variables that made a statistically significant contribution to the model were: sexual self-confidence ( $p < 0.0009$ ), health status ( $p < 0.007$ ), and sexual desire ( $p < 0.03$ ). Table 1 presents results of the logistic regression analyses for females and males.

### *Multiple Regression*

Separate multiple regressions were performed for men and women using sexual satisfaction and quality of life as dependent variables. Zero-order correlations were conducted to identify the existence of relationships between the predictor variables and the outcome, as well as to assess inter-correlations between the independent pre-



dictors. To examine if sociological, cultural, and psychological factors could account for variance beyond those explained by biology, demographic and biological predictors were entered into the model first. An initial multiple regression was performed with all independent variables for both women and men. Based upon the limited number of participants in the study, the maximum number of variables were included in a best-fit multiple regression analysis for both sexes. Variables selected were based upon:  $R^2$ , adjusted  $R^2$ , and Mallows'  $C_p$  statistic.

### Sexual Satisfaction

The multiple regression procedure was conducted to determine if a set of variables could account for a significant portion of the variance in sexual satisfaction. Pearson correlations revealed the variables most strongly correlated with sexual satisfaction for women were: sexual self-confidence ( $r = .76, p < 0.0001$ ), relationship satisfaction ( $r = .61, p < 0.0001$ ), frequency of orgasm ( $r = .56, p < 0.0001$ ), sexual performance ( $r = .53, p < 0.0001$ ), frequency of sexual desire ( $r = .49, p < 0.0001$ ), sexual desire ( $r = .46, p < 0.0001$ ), sexual priority ( $r = .46, p = 0.001$ ), social roles ( $r = .45, p < 0.0001$ ), quality of life ( $r = .44, p < 0.0001$ ), sexual significance ( $r = .43, p = 0.0003$ ), sexual acceptability ( $r = .32, p = 0.006$ ), and locus of control ( $r = .26, p = 0.03$ ).

Results of the multiple regression on sexual satisfaction were statistically significant for women [ $F(3, 42) = 29.91, p < 0.0001$ ]. The regression produced a  $R^2 = .6811$ , indicating that 68% of the total variability in sexual satisfaction was accounted for by the model. Statistically significant contributors to the model when added last were: sexual self-confidence ( $p < 0.0002$ ) and frequency of orgasm ( $p < 0.0007$ ).

Pearson correlation calculations indicated that the variables most strongly correlated with sexual satisfaction for men were: sexual performance ( $r = .68, p < 0.0001$ ), sexual self-confidence ( $r = .68, p < 0.0001$ ), sexual desire ( $r = .65, p < 0.0001$ ), frequency of orgasm ( $r = .57, p < 0.0001$ ), relationship satisfaction ( $r = .56, p < 0.0001$ ), sexual significance ( $r = .52, p < 0.0001$ ), sexual priority

**Table 1. Logistic Regression for Variables Predicting Sexual Intercourse**

	Sexual Intercourse (Last Month)			
	$X^2$	p-value	OR	95% CI
<b>Females</b>				
Predictive Factors ( $n = 51$ )				
Sexual Self-Confidence*	5.95	0.0147	1.35	1.06-1.72
Social Activity*	4.72	0.0298	1.71	1.05-2.79
Sexual Priority	1.31	0.2518	1.36	.80-2.32
-2 Log Likelihood = 70.52; Chi-Square = 18.43 (3df), $p < 0.0005$ ; $R^2 = .4048$ Percent Concordant: 83%; Percent Discordant: 17%; Gamma = .66				
<b>Males</b>				
Predictive Factors ( $n = 84$ )				
Sexual Self-Confidence*	11.29	0.0008	1.71	1.25-2.34
Health Status*	7.51	0.0061	.39	.20-0.77
Sexual Desire*	5.10	0.0239	2.56	1.13-5.75
Frequency of Orgasm	3.01	0.0826	1.32	.97-1.81
Sexual Acceptance	1.14	0.2851	.70	.37-1.34
-2 Log Likelihood = 108.27; Chi-Square = 55.95 (5df), $p < 0.0001$ ; $R^2 = .6713$ Percent Concordant: 93%; Percent Discordant: 7%; Gamma = .86				
Note. OR = Odds Ratio; 95% CI = 95% Confidence Interval *Statistically significant at $p < 0.05$				

( $r = .44, p < 0.0001$ ), sexual acceptability ( $r = .42, p < 0.0001$ ), frequency of sexual desire ( $r = .41, p < 0.0001$ ), positive body image ( $r = .41, p < 0.0001$ ), quality of life ( $r = .37, p < 0.0001$ ), social roles ( $r = .35, p = 0.0001$ ), number of chronic health conditions ( $r = -.30, p = 0.001$ ), and level of physical fitness ( $r = .26, p = 0.006$ ).

Results of the multiple regression on sexual satisfaction were statistically significant for men [ $F(5, 78) = 40.11, p < 0.0001$ ]. The regression produced a  $R^2 = .7200$ , indicating that 72% of the variability in sexual satisfaction was accounted for by the model. Statistically significant contributors to the model when added last were: relationship satisfaction ( $p < 0.0001$ ), sexual self-confidence ( $p < 0.0001$ ), and frequency of orgasm ( $p < 0.0004$ ). Table 2 presents results of the multiple regression analyses on sexual satisfaction for females and males.

### Quality of Life

Multiple regression was conducted to determine if a set of variables could account

for a statistically significant portion of the variance in quality of life. Pearson correlations indicated that the items most strongly correlated with quality of life for women were: locus of control ( $r = .52, p < 0.0001$ ), social roles ( $r = .47, p < 0.0001$ ), sexual acceptability ( $r = .44, p < 0.0001$ ), sexual satisfaction ( $r = .44, p = 0.0001$ ), sexual self-confidence ( $r = .43, p = 0.0002$ ), positive body image ( $r = .38, p = 0.0005$ ), physical fitness ( $r = .36, p = 0.0005$ ), relationship satisfaction ( $r = .35, p = 0.002$ ), sexual priority ( $r = .34, p = 0.001$ ), sexual desire ( $r = .33, p = 0.003$ ), sexual performance ( $r = .33, p = 0.003$ ), negative body image ( $r = .27, p = 0.01$ ), number of chronic health conditions ( $r = -.26, p = 0.01$ ), and health status ( $r = .23, p = 0.03$ ).

Results of the multiple regression were statistically significant for women [ $F(3, 50) = 10.56, p < 0.0001$ ]. The regression produced a coefficient of multiple determination of  $R^2 = .3879$ , indicating that 39% of the total variability in quality of life was

**Table 2. Multiple Regression for Variables Predicting Sexual Satisfaction**

		t-value	p-value		
<b>Females</b>					
Predictive Factors (n=46)					
Sexual Self-Confidence*		4.29	0.0001		
Frequency of Orgasm*		3.70	0.0006		
Relationship Satisfaction		1.99	0.0530		
Source	df	SS	MS	F	p-value
Model	3	840.18	280.10	29.91	< 0.0001
Error	42	393.30	9.36		
Total	45	1233.48			
R <sup>2</sup> = .6811, Adj R <sup>2</sup> = .6584					
<b>Males</b>					
Predictive Factors (n = 84)					
Relationship Satisfaction*		6.30		< 0.0001	
Sexual Self-Confidence*		5.51		< 0.0001	
Frequency of Orgasm*		3.79		0.0003	
Health Status		-1.77		0.0801	
Social Roles		1.35		0.1798	
Source	df	SS	MS	F	p-value
Model	5	2149.60	429.92	40.11	< 0.0001
Error	78	835.96	10.72		
Total	83	2985.56			
R <sup>2</sup> = .7200, Adj R <sup>2</sup> = .7021					
*Statistically significant at p < 0.05					

accounted for by the model. Statistically significant contributors to the model when added last were: locus of control ( $p < 0.002$ ) and sexual self-confidence ( $p < 0.004$ ).

Pearson correlation calculations demonstrated that the variables most strongly correlated with quality of life for men were: locus of control ( $r = .53, p < 0.0001$ ), social roles ( $r = .45, p < 0.0001$ ), relationship satisfaction ( $r = .44, p < 0.0001$ ), health ( $r = .38, p < 0.0001$ ), sexual satisfaction ( $r = .37, p < 0.0001$ ), sexual self-confidence ( $r = .36, p = 0.0001$ ), sexual performance ( $r = .30, p = 0.001$ ), sexual acceptance ( $r = .29, p = 0.001$ ), physical fitness ( $r = .27, p = 0.003$ ), sexual desire ( $r = .26, p = 0.004$ ), and positive body image ( $r = .26, p = 0.005$ ).

Multiple regression on quality of life were statistically significant for men [F (6,

83) = 13.62,  $p < 0.0001$ ]. The regression produced a  $R^2 = .4961$ , indicating that 50% of the total variability in quality of life was accounted for by the model. Statistically significant contributors to the model when added last were: locus of control ( $p < 0.0001$ ), sexual satisfaction ( $p < 0.002$ ), age ( $p < 0.007$ ), health status ( $p < 0.02$ ), sexual desire ( $p < 0.04$ ), and social roles ( $p < 0.05$ ). Table 3 presents results of the multiple regression analyses on quality of life for females and males.

## DISCUSSION

### Participation in Sexual Intercourse

Logistic regression analyses demonstrated that a set of variables statistically predicted current sexual intercourse for females and males. The items that comprised

the logistic regression model for females included sexual self-confidence, social activity, and sexual priority. Variables that contributed to the logistic regression model for males were sexual self-confidence, health status, sexual desire, frequency of orgasm, and sexual acceptance.

Predictors of current sexual activity reported in the literature are consistent with the present investigation. The variable social activity in the model for females supports the research of Matthias, Lubben, and Atchison,<sup>25</sup> who found that good social networks were statistically related to sexual activity among older adults. The inclusion of health status in the model for males is compatible with prior research which reports that superior physical and mental health status are statistically significant predictors of sexual activity.<sup>4,13-16,22,26,27</sup> Moreover, the variables sexual priority/attitudes in the model for females and sexual acceptance/attitudes included in the model for males support the research of Johnson,<sup>10</sup> who found that sexual attitudes and sexual interest predicted older adult current sexual activity. The present study suggests that greater health status, maintenance of social activities, and positive sexual attitudes help to distinguish between older adults who are currently sexually active and those who are not sexually active.

Of particular interest is the present finding that sexual self-confidence was the strongest predictor to account for variability in current participation in sexual intercourse for both women ( $p < 0.02$ ) and men ( $p < 0.0009$ ). Sexual self-confidence encompasses greater levels of sexual enjoyment, confidence in sexual abilities, sexual comfort, and sexual fulfillment. These results suggest that participants who reported higher levels of these sexual health variables were also the respondents who were currently sexually active. Previous research<sup>10</sup> has identified self-esteem, which plays a role in sexual self-confidence, as a predictor of sexual intercourse. There is a paucity of research relative to sexual engagement and its relationship with variables measuring sexual self-confidence and/or overall self-esteem among older adults. Consequently,

**Table 3. Multiple Regression for Variables Predicting Quality of Life**

			t-value	p-value	
<b>Females</b>					
Predictive Factors (n = 54)					
			3.03	.0017	
			3.32	.0039	
			-1.25	.2168	
Source	df	SS	MS	F	p-value
Model	3	5.24	1.75	10.56	< .0001
Error	50	8.26	.17		
Total	53	13.50			
R <sup>2</sup> = .3879, Adj R <sup>2</sup> = .3512					
<b>Males</b>					
Predictive Factors (n = 90)					
			4.12	< .0001	
			3.32	.0013	
			2.79	.0066	
			2.48	.0151	
			-2.12	.0374	
			2.08	.0407	
Source	df	SS	MS	F	p-value
Model	6	15.46	2.58	13.62	< .0001
Error	83	15.70	.19		
Total	89	31.16			
R <sup>2</sup> = .4961, Adj R <sup>2</sup> = .4597					
*Statistically significant at p < 0.05					

the results relative to sexual self-confidence are an important and unique finding.

**Sexual Satisfaction**

The multiple regression procedure identified a set of variables that accounted for a statistically significant portion of the variance in sexual satisfaction. The regression for females found that 68% of the total variability in sexual satisfaction was accounted for by the model. Contributors to the regression model for women were: sexual self-confidence, frequency of orgasm, and relationship satisfaction. Multiple regression results were also statistically significant for males, indicating that 72% of the total variability in sexual satisfaction was accounted for by the model. Contributors to the regression model for men included: relationship satisfaction, sexual self-confidence, frequency of orgasm,

health status, and social roles.

This investigation revealed that orgasm frequency and relationship satisfaction were among the most important predictors of sexual satisfaction for both women and men. Sexual self-confidence, relationship satisfaction, and frequency of orgasm appeared as the top three predictors in the regression models for both sexes. These results are consistent with previous research by Young,<sup>21,22</sup> in which the strongest predictors of sexual satisfaction among married men and women were overall satisfaction with marriage, non-sexual aspects of the relationship, self-spouse orgasm, frequency of sexual activity, and uninhibitedness. Social roles and health status, predictors of sexual satisfaction for men in the current study, have also been identified as predictors of sexual satisfaction in prior

research.<sup>25,28</sup> The present finding that sexual self-confidence was a statistically significant predictor of sexual satisfaction for both women ( $p < 0.0002$ ) and men ( $p < 0.0001$ ) is supported in the literature as well. Leopold<sup>28</sup> found that variables measuring body image, self-consciousness, and self-esteem played a role in predicting satisfaction with one's sexual life. It should be noted, however, that sexual self-confidence assessed in this study may possibly be a construct separate from overall self-esteem or global body image.

**Quality of Life**

The multiple regression procedure identified a set of variables that accounted for a statistically significant portion of the variance in quality of life for both women (39%) and men (50%). For females, contributors to the regression model when added last included: locus of control, sexual self-confidence, and number of chronic health conditions. For males, contributors to the model when added last were: locus of control, sexual satisfaction, age, health status, sexual desire, and social roles.

These results are compatible with other research relative to life quality among older populations. For example, a recent investigation by Robinson and Molzahn<sup>3</sup> found the strongest predictors of quality of life for older adults were relationship satisfaction, health status, and sexual activity. Non-significant predictors included age, gender, marital status, and education. Similarly, Soleman, Amanda, and Anissa<sup>29</sup> identified physical health, social support, emotional balance, and locus of control as the four top variables that predicted life satisfaction among older adults. Locus of control and physical health were identified as predictor variables of quality of life for both sexes in this study. Locus of control was the strongest predictor of satisfaction with life quality for both sexes. An internal locus of control has been positively associated with exercise, leisure activity, social interaction, functional capacity, health, and greater life satisfaction among older adults.<sup>29-32</sup> An external locus of control has been associated with lower education, widowhood, and



retirement.<sup>33</sup> Current results demonstrate that a greater belief in the control over one's physical and mental health, or having an internal locus of control, was the strongest predictor of satisfaction with quality of life for all participants.

### Limitations

Methodological limitations should be taken into consideration when interpreting these results. The study instrument consisted of a self-report questionnaire. Self-report measures are only as accurate as the memory and truthfulness of the respondents. In addition, the current study utilized a cross-sectional research design, indicating that correlates of behavior were assessed rather than antecedents of behavior. Moreover, overall response rates were not as high as one might desire. This may limit the generalization of the study findings. The nature of the subject matter and/or the length of time necessary to complete the survey may possibly have negatively influenced potential respondents. The timing of the mail-out may have had bearing on response rates as well. It is common for Northern or non-U.S. resident retirees to spend summer months North (or in their native country), and the other half of the year at their retirement residence. There is a likelihood that a number of residents may not have been occupying their retirement home at the time of the survey mail-out. This low response rate quite likely had an impact on the responses gathered.

It is a possibility that respondents who were recruited from the flea market lived in a different retirement community from the primary retirement community sampled. Thus, findings from the study may have been influenced by specific characteristics of the sample. For example, the single largest retirement community is an active retirement population which hosts health fairs, daily scheduled physical activities, and other social gatherings which may improve older adults' social networks and overall quality of life. Moreover, almost one-third of the sample had a graduate degree and had an annual household income of at least \$55,000. Individuals with higher education, higher income, and better access to health care may

be more comfortable with sexuality, and therefore, may differ from the typical older adult in our country.

Lastly, three of the subscales utilized in the data analyses demonstrated lower reliability coefficients. This may be considered a limitation as a lack of strength produced by Cronbach's alpha calculations indicates that these items were not consistently measured within the constructs investigated; however, the fewer the number of items in a subscale, the more likely Cronbach's alpha will be low. Thus, lower alpha levels may have resulted from the lower number of items which comprised each construct ( $n = 3$  in each subscale). Principal components factor analysis was run to examine the set of interdependent relationships by isolating the underlying factors explaining the construct of interest, and factor loading magnitudes for all three of these subscales were strong ( $> .60$ ).

### TRANSLATION TO HEALTH EDUCATION PRACTICE

Sexual health variables have not been investigated frequently in studies of quality of life among older adults. The present investigation revealed that sexuality items were significant predictors of quality of life for women (sexual self-confidence) and men (sexual satisfaction and sexual desire). Sexual self-confidence appeared to be the single most important predictor of participation in sexual intercourse and sexual satisfaction, and (for women) quality of life. These study findings have implications for health education interventions. For example, health educators might develop programs specifically to address quality of life and sexual health issues, and perhaps sell or market them under a different or more alluring topic name so as to decrease the stigma that older adults may feel from attending these programs. Health educators who develop interventions and programs that provide education about sexuality may enhance sexual self-confidence and quality of life among community dwelling older adults.

Despite the aging of the population, there is still comparably little known about sexuality and life quality among older persons.

Findings from the study demonstrate that cultural (sexual acceptance, sexual priority), psychological (sexual desire, sexual self-confidence, locus of control), and social factors (relationship satisfaction, social activity, social roles) further explain variance beyond biological changes that predict sexual intercourse, sexual satisfaction, and overall quality of life. Sexual health in later life should be explored through additional research, including the investigation of pre-existing sexual difficulties and pre-existing sexual experiences, as they are likely to influence present sexual factors. Prospective, longitudinal studies should examine the fundamental question of whether sexual relationships (activity, satisfaction, desire, attitudes) change with time. Those who are uncomfortable with sexuality or have sexual response issues in young adulthood more than likely carry these difficulties into older adulthood. Sexual education should also address young and middle age persons to increase sexual satisfaction throughout adulthood and into older ages.

In reviewing the literature, many issues related to late life sexuality among women remain unexplored. A number of articles focus on older men with emphasis on the impact of medication and illness relative to sexual well-being and satisfaction; however, female sexuality has received considerably much less attention.<sup>34</sup> Given that women tend to live longer than men, and the number of aging women far exceeds the number of aging men in every age category over 65 years of age with the gap widening as age increases, future research in this area is needed. Because women outnumber men in later life, the opportunity for heterosexual relationships is diminished. Thus, the emergence of this unique situation among older women requires further empirical exploration relative to sexual health barriers and managing sexual desire.

Overall, the findings of this study add to the existing body of literature and help to fill the void of research relative to sexuality and older adults, but especially the lack of research related to older women's sexual health and quality of life. These findings have





implications for sex educators, counselors, therapists, physicians, health educators, and other health professionals trying to meet the needs of older adults. Specifically, health professionals should recognize that sexuality continues to play an important role in the lives of older adults and makes substantial contributions to their quality of life. In structured interventions, in group presentations, as well as in individual counseling sessions and informal discussions with older adults, health professionals should address issues related to sexuality, including sexual health and aging. This should include providing information to enhance sexual health knowledge, promote healthy relationships, and encourage both sex positive attitudes, and the development of sexual self-confidence. Such efforts may produce a greater awareness of individual and partner sexual health issues associated with aging, encourage attitudes and behaviors that may optimize sexual functioning, and enrich quality of life. Continued scientific research directed toward the aging process, including sexuality and quality of life issues among older adults, is imperative in order to maximize the potential of America's aging population.

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