

Original Article

Factors influencing sexual function of middle-aged married Korean women

YOUNGJU JEE¹⁾, YOUNGHAЕ KIM^{2)*}

¹⁾ College of Nursing, Kyungnam University, Republic of Korea

²⁾ College of Nursing, Pusan National University: 49 Busandaehak-ro, Mulgeum-eup, Yangsan 626-870, Republic of Korea

Abstract. [Purpose] This study investigated the status of women's sexual function and relevant factors given the fact that women's health is crucial to the national health, and in particular that women's sexual health has a significant impact on their overall health. [Subjects and Methods] This study surveyed 353 women living in South Korea's P and K metropolitan regions from July 2012 to August 10, 2013. The Female Sexual Functional Index (FSFI), the Sexual Attitude Scale (SAS), sexual knowledge and questionnaires were used. [Results] Two groups based on FSFI scores above and below a cutoff value of 25 were compared with each other, and significant differences were found in age, male friends, menstrual status, sex status, and frequency of sex, experience of forced sex, personal health, husband's health and sexual knowledge. Male friends, sex status, experience of forced sex, husband's healths and sexual knowledge explained women's sexual function. [Conclusion] The finding that women's sexual function is associated with multiple factors suggests an intervention program for improving women's sexual function should be developed to reflect the factors influencing the target groups' sexual function.

Key words: Education, Sex, Women's health

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INTRODUCTION

People's sex lives are part of the expression of a basic instincts are crucial to human life, and have a significant influence on individuals and society. As a catalyst for biorhythm, a healthy sex life lessens mental and physical exhaustion, brings relaxation and enriches the quality of life¹⁾. The world health organization (WHO) defines sexual health as physical, emotional, mental and social well-being in relation to sexuality, and emphasizes pursuing sexual health is a basic human right²⁾. For women in particular, sexual satisfaction is acknowledged as the most important measure for assessing the quality of life²⁾. Moreover, sex-related issues weigh on middle-aged women facing an increasing number of factors detrimental to sexual function on account of decreased estrogen production associated with climacteric changes, as well as the fear of ageing. Previous studies reported the factors influencing the sexual function in married Korean women included such general attributes such as age, education, family income^{3, 4)}, marital status⁵⁾, feeling attracted to other men⁶⁾ and medication⁷⁾. Regarding the attributes relevant to sexual function, not only menstrual status and physical illness^{4, 8)} but also sexual activeness/

inactiveness and frequency of sex⁹⁾ were mentioned. In women, the more positive attitude one takes toward sex, the more active one's sexual function^{10, 11)}. Also, the finding that knowledge-ability about and affirmative attitude towards sex are positively correlated with women's sexual function¹²⁾ indicates that both sexual knowledge and attitude are important elements of sexual function. Unlike in the past, when the perspective of women's sexual health was limited to reproductive organs and functional aspects, it has recently embraced the concept of holistic human well-being that a healthy sex life improves one's self-fulfillment and productivity, exerting positive effects on physical health issues and raising the quality of life³⁾. Thus, a multidimensional study is required to provide some reference data for interventions for sexual dysfunction disorders, and ultimately to enhance the quality of life of Korean women, as well as to establish the factors influencing such disorders. Therefore, this study investigated the status of Korean women's sexual function and the difference in characteristics between a sexually dysfunctional group and a normal group to establish the factors associated with their sexual function, in order to provide reference data for intervention programs helping women avoid sexual dysfunction disorders.

SUBJECTS AND METHODS

This study was a cross-sectional and descriptive correlation study. A questionnaire survey was conducted from July 2012 to August 10, 2013, and Total 353 subjects participated in the survey. Excluding unfit responses, the final data used in the analysis was collected from 68 women attending a

*Corresponding author. YoungHae Kim (E-mail: ungaekim@pusan.ac.kr)

training session for female leaders in rural farming regions arranged by a local government, 52 women in local communities where 8 nursing students attending a master's course at Pusan National University were working, 89 caregivers for the elderly in a Regional Office of Patriots and Veterans Affairs, and 144 housewives in local communities in an urban area. This study was approved by the Institutional Review Board of Pusan National University Hospital (IRB No. 05-2012-046). Three instruments were used. To determine subjects' sexual attitude, the Sexual Attitude Scale (SAS) developed by Hudson, Murphy and Nurius¹³ and revised by Kim, Eo, Choi and Lee¹⁴ was used. The SAS was designed to measure the conservative tendency of people's sexual expression, and consisting of 25 question items, each of which is rated on a scale of 1 (strongly disagree) to 5 (strongly agree). The minimum score is 25 points and the maximum score is 125. A Cronbach's α was initially reported as 0.90¹³, and as 0.87 by Kim et al¹⁴. To find out subjects' knowledge about sex, a sexual knowledge instrument consisting of 20 question items was used. Question items about the sex-related knowledge of men and women were rated on a scale of 1 for each correct answer and 0 for each incorrect one, with a score range from 0 to 20. The Cronbach's α for this instrument has been reported to be 0.89. The third instrument was the Female Sexual Functional Index (FSFI). This instrument consists of 19 question items in 6 sub-categories (sexual appetite, sexual arousal, vaginal lubrication, orgasm, satisfaction, and sexual pain). The scores range from 2 points minimum to 36 points maximum, and higher scores indicate higher level of awareness of sexual function. We used the cutoff score of 25.0 reported by Song, Jeon, Kim, Paick, Son¹⁵ Korean women, and women scoring less than 25.0 were classified as sexually dysfunctional. As for the instrument's reliability, Cronbach's α was reported as 0.99 by Kim et al¹⁰. The collected data were analyzed using SPSS/WIN 18.0, and with significance in two-tailed tests at the 5% level. Subjects' general demographics and sexual function characteristics were determined using frequency, percentage, mean and standard deviation. The χ^2 test and t-test were used to comparatively analyze the differences in both demographics and sexual function characteristics between the sexually dysfunctional group and normal group. To determine the factors predicting sexual dysfunction disorders, univariate analysis was used with significance accepted for $p < 0.05$. Significant demographic and sexual-function variables were treated as independent variables whilst sexual dysfunction disorders were treated as dependent variables in multiple logistic regression analysis using the forward selection method. Here, the input level of independent variables was 0.05, and the elimination level was 0.10. The odds ratio (OR) of each factor and the 95% confidence interval (CI) were calculated. The sexual dysfunction model's test power was analyzed using the Hosmer and Lemeshow test.

RESULTS

The mean score of sexual function among 353 subjects was 22.56, which was below 25, indicating that the subjects had an overall classification of "dysfunctional". To be specific, 221 (62.6%) and 132 (37.4%) subjects were classified

as dysfunctional and normal respectively. The mean age of the participants was 51.52 years old, with husbands being a bit older (54.49 years of age). Participants' education score was 3.89 on average with college graduates accounting for 17.4%. The highest percentage (57.3%) of participants was high school graduates. Husbands' education mean was 4.20 with 29.4% being college graduates. Again, the highest percentage (48.5%) of participants' husbands was high school graduates. As for marital status, 95.7% of respondents stayed married, followed by being separated by death (3.7%), and divorced or separated (0.6%); 14.4% of respondents had male friends, whereas 85.6% did not. Regarding menstrual status, the highest percentage of respondents (81.9%) were post-menopausal, whereas 15.3% had irregular menstruation and 32.6% had regular periods. Among the respondents 85.2% had sex, whereas 14.7% did not. As for the frequency of sex, the highest percentage (44.9%) of respondents were having sex 'more than once a month' followed by 'more than once a week' (26.1%); 41% of respondents experienced forced sex. Among the respondents 59.8% said their health was average, 58.3% of respondents said their husbands' health was average, and 71.1% of respondents were not on medication. The means of sexual knowledge and attitude were 8.31 and 83.05, respectively (Table 1).

Significant differences were found between the sexually dysfunctional group and normal group based on the cutoff point 25 ($p < 0.001$). The age distribution of participants varied ($p = 0.001$), while that of husbands did not ($p = 0.090$) between the two groups. No difference was found in participants' husbands' education between the sexually dysfunctional and functional groups. No difference was found in participants' marital status between the dysfunctional and functional groups. Male friends ($p = 0.003$), menstrual status ($p < 0.001$) and having sex or not ($p = 0.001$) differed between the two groups. Both the frequency of sex ($p = 0.003$) and the experience of forced sex ($p < 0.001$) also differed significantly between the two groups. Health differed significantly for both participants ($p = 0.002$) and their spouses ($p = 0.005$) between the sexually dysfunctional and functional groups, but no significant difference was found in medication ($p = 0.130$) between the two. The mean sexual knowledge of 8.31 proved to be below the median value 10, whereas the mean sexual attitude of 83.05 was above the median value 75. Sexual knowledge scores differed significantly between the two groups ($p < 0.001$), whereas the sexual attitude scores did not ($p = 0.333$) (Table 2).

Logistic regression analysis was conducted to establish the predictors of sexual dysfunction disorders. Male friends, sexual activeness, experience of forced sex, spouses' health conditions and sexual knowledge proved to be the predictors of women's sexual dysfunction disorders. When odds ratios were compared, the ORs of male friends, sexual activeness, experience of forced sex, husbands' health conditions and sexual knowledge were 0.427 (95% CI: 0.194–0.938), 5.944 (95% CI: 1.960–18.029), 2.002 (95% CI: 1.235–3.244), 0.539 (95% CI: 0.355–0.816), and 1.142 (95% CI: 1.027–1.271), respectively. The explanatory power of the dependent variables was 20.2% (Nagelkerke R^2), with the Hosmer and Lemeshow Test gave a value of 0.077, which proved no there was significant difference between the observed and

Table 1. Demographics and sexual function characteristics (N=353)

Variables	Categories	mean±SD
FSFI		22.56±7.17
Wife age		51.52±7.64
Husband age		54.49±7.81
Wife's education	None	3.89±1.03
	Elementary school	
	Middle school	
	High school	
	College	
	University	
	Graduate school	
Husband's education	None	4.20±1.14
	Elementary school	
	Middle school	
	High school	
	College	
	University	
	Graduate school	
Marital status	Single	2.08±0.38
	Married	
	Divorce or separation	
	Bereavement	
Male friends	Have	1.86± 0.35
	None	
Menstruation	Have	2.20± 0.90
	Irregular	
Sex status	None	1.15± 0.36
	None	
	At least once/week	
Frequency of sex	More than once/month	1.63± 0.97
	At least once/3 months	
	At least once/6 months	
Experience of forced sex	Have	1.59± 0.49
	None	
	Very bad	
Wife's health	Bad	3.20±0.72
	Average	
	Good	
	Very good	
Husband's health	Bad	3.31± 0.78
	Average	
	Good	
Drugs	Have	1.29± 0.45
	None	
Sexual knowledge		8.31±2.29
Sexual attitude		83.05±11.25

predictive values, supporting the reliability of explanatory power (Table 3).

DISCUSSION

This study identified the status of sexual function in Korean women, and determined factors affecting their sexual function. The subjects' sexual function score averaged 22.56 (2–36), which is higher than the 19.97 (2–28) reported by Bae et al.¹⁶⁾ and 14.82 (2–28) reported by Park and Jang⁵⁾. These previous studies simply added up all the scores of the questionnaire (maximum: 28), whereas the present study used the sum with weightings given (maximum: 36). Thus, it is hard to directly compare these scores with those of our present findings. Kim and Lee⁸⁾ also applied weightings and reported a score of 20.64, which is a bit lower than that of the present study.

Previous studies found sexual function to be significantly correlated with spouses' age, education, marital status, medication and sexual attitude, which was not the case in the present study. Sexual dysfunction disorders vary with age^{3, 4)}, which is attributed to falling levels of female sex hormones leading to decreased sexual function in most pre- or post-menopausal subjects¹⁷⁾. Unlike the initial assumption, the age of the husband as a sex partner was found not to influence a woman's sexual function, which needs to be verified via replication studies with larger samples. Bae³⁾ reported that sexual function varied significantly with education ($p<0.001$), which was not the case in this study. Such different findings seem to be the result of different percentages of college graduates, i.e. more than 53% in Bae³⁾ vs. more than 17% (women) and 29% (husbands) in the present study. Similarly, Tomic et al.¹⁸⁾ also found that education served as an influencing factor on sexual function with 57.7% of their subjects having finished tertiary education, which is comparable to Bae³⁾. Hence, it may be that education influences the sexual function of the highly educated, whereas it may be an insignificant factor for those who are not college graduates. Bae³⁾ found that sexual function varied with marital status, which was not the case in the present study, nor in Tomic et al.¹⁸⁾. The present study and Tomic et al.¹⁸⁾ focused on middle-aged married women including those who were divorced or separated by death, whereas 3.3% of participants were not married in the study of Bae³⁾. Despite the confidentiality principle, the authenticity of responses is likely to affect overall findings of a study on sexual function with both unmarried and married female participants due to Korean sentiment. Kim et al.⁷⁾ found medication significantly varied with sexual function, which was not the case in this study. In contrast to the study of Kim et al.⁷⁾ in which more than 41% of subjects had symptomatic urinary incontinence, the present study dealt with mostly healthy women, with no more than 11% of subjects reporting they were unhealthy, even though urinary incontinence was not considered here. It may be too much to infer that medication is a factor influencing differences in sexual function based on the findings of a study with many subjects having urologic diseases that substantially affect women's sexual function, and those of our subjects. Yang, Hwang and Park¹⁹⁾ reported sexual attitude caused differences in sexual function in pre-menopausal

Table 2. Comparison of characteristics between the normal and sexual dysfunction groups (N=353)

Variables	Categories	Sexual dysfunction	Normal (n=132, 37.4%)	
		(n=221, 62.6%) mean±SD, n (%)	mean±SD, n (%)	
FSFI		18.60±6.54	28.36±2.53	*
Wife age		51.75±8.20	51.15±6.61	*
Husband age		54.62±8.17	54.29±7.18	
Wife's education	None	0 (0)	0 (0)	
	Elementary school	30 (8.5)	10 (2.8)	
	Middle school	30 (8.5)	19 (5.4)	
	High school	124 (35.2)	78 (22.1)	
	College	23 (6.5)	21 (5.9)	
	University	4 (1.1)	4 (1.1)	
	Graduate school	10 (2.8)	0 (0)	
Husband's education	None	0 (0)	0 (0)	
	Elementary school	12 (3.4)	8 (2.3)	
	Middle school	36 (10.2)	22 (6.2)	
	High school	104 (29.5)	67 (19.0)	
	College	34 (9.6)	23 (6.5)	
	University	21 (5.9)	8 (2.3)	
Marital status	Graduate school	14 (4.0)	4 (1.1)	
	Single	0		
	Married	208 (58.9)	130 (36.8)	
	Divorce or separation	1 (0.3)	1 (0.3)	
Male friends	Bereavement	12 (3.4)	1 (0.3)	
	Etc	0		
Menstruation	Have	41 (11.6)	10 (2.8)	*
	None	180 (51.0)	122 (34.6)	
Sex status	Have	83 (23.5)	32 (9.1)	*
	Irregular	22 (6.2)	32 (9.1)	
Frequency of sex	None	116 (62.6)	68 (19.3)	
	Have	178 (50.4)	123 (34.8)	*
	None	43 (12.2)	9 (2.5)	
Experience of forced sex	None	42 (11.9)	9 (2.6)	
	At least once/week	57 (16.2)	35 (9.9)	
	More than once/month	86 (24.4)	72 (20.5)	*
Wife's health	At least once/3 months	30 (8.5)	10 (2.8)	
	At least once/6 months	6 (1.7)	5 (1.4)	
	Have	75 (21.2)	70 (19.8)	*
	None	146 (41.4)	62 (17.6)	
Husband's health	Very bad	4 (1.1)	0 (0)	
	Bad	20 (5.7)	17 (4.8)	
	Average	120 (34.0)	91 (25.8)	*
	Good	63 (17.8)	23 (6.5)	
	Very good	14 (4.0)	1 (0.3)	
Drugs	Very bad	0 (0)	2 (0.6)	
	Bad	12 (3.4)	17 (4.8)	
	Average	124 (35.1)	82 (23.2)	*
Sexual knowledge	Good	71 (20.1)	29 (8.2)	
	Very good	14 (4.0)	2 (0.6)	
Sexual attitude	Have	69 (19.5)	33 (9.3)	
	None	152 (43.1)	99 (28.0)	
		8.19±2.05	8.52±2.64	*
		82.83±11.13	83.43±11.47	

* < 0.05

Table 3. Predictors of sexual dysfunction in women: results of multiple logistic regression (N=353)

Variables	B	SE	Wald	p value	OR	(95% CI for OR)	
						Lower	Upper
Male friends	-0.851	0.402	4.489	0.034	0.427	0.194	0.938
Sex status	1.782	0.566	9.914	0.002	5.944	1.960	18.029
Experience of forced sex	0.694	0.246	7.930	0.005	2.002	1.235	3.244
Husband's health	-0.619	0.212	8.519	0.004	0.539	0.355	0.816
Sexual knowledge	0.133	0.054	5.968	0.015	1.142	1.027	1.271
(Constant)	0.402	1.412	0.081	0.776	1.494		

Nagelkerke $R^2=20.2$; Hosmer and Lemeshow Test=0.077

women only, whereas nearly 70% of subjects included in the present study had abnormal conditions associated with post-menopausal syndromes, which indicates that menopause as a physical event is present in different sexual attitudes in line with female sexual function. In short, although sexual function may vary with pre-menopausal sexual attitude, it may be safely assumed that physical and physiological changes during the menopausal years are more significant factors influencing sexual function than sexual attitude.

In the normal group, the frequency of sex was found to be 5.944 times higher, the experience of forced sex to be 2.002 times lower, the sexual knowledge to be 1.142 times higher, husbands to be 1.855 times healthier and the presence of male friends to be 0.427 times lower than the sexually dysfunctional group. Subjects' age, menopausal status, frequency of sex and health were expected to serve as predictive factors and included in the analysis, but they were found to be insignificant. The importance of these factors needs to be revisited in future studies with large-scale data from different age groups. Taken together, multidimensional factors influence women's sexual function, which suggests that intervention programs for sexual function should reflect the factors influencing sexual function which are specific to the target groups in order to improve the quality of women's life. This cross-sectional study was limited to middle-aged women in certain regions, which is why care must be taken before generalization of the present findings. Changes in women's sexual function over time and the effects of intervention programs are worth researching.

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