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Causal Relationships between Female Sexual Dysfunction and Related Variables in Korean Women

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Abstract

The purpose of this study was to identify the prevalence and related factors of female sexual dysfunction(FSD). Five hundred fourteen women aged more than 20 years and who lived in five major cities in Korea completed an organized questionnaire during study visits. Age, marital period, education, menstruation, marital status, type of contraception, perceived health state, presence of disease, sexual distress, sexual attitude, marital adjustment, and crisis had direct influence on FSD. In addition, sexual distress, sexual attitude, marital adjustment, and crisis were found to be significant risk factors of FSD. Sexual function was higher in women with good subjective health status, positive sexual attitude, and good marital adjustment and those without sexual distress, depression, crisis, and stressful life event. This study results indicate that FSD may be influenced by both health-related and psychosocial factors. While the causal relationship between sexual dysfunction and quality of life concomitants remains to be further investigated, the strong associations between the variables observed in this study suggest that sexual dysfunction is a largely uninvestigated yet significant public health problem. Future studies that develop comprehensive nursing interventions reflecting various predictors of FSD and effective educational programs considering features of Korean society are needed to decrease and prevent sexual dysfunction in Korean women.

Key words: sexual dysfunction, women's health, epidemiology

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I. INTRODUCTION

Interest in human sexual function has considerably increased in recent years. Western societies are more open to sexual matters, and sexual images are often used in advertisement or entertainment. These shifts in social attitudes towards sexual issue may increase the number of people who wonder whether or not their sexual performances are optimal and those who may consult health professionals(Edward, Anthony, & Raymond, 1999). Adequate sexual expression is an essential part of many human relationships. It may enhance an individual's quality of life and provide a sense of physical, psychological, and social well-being(Baldwin, 2001). Perception of one's sexual satisfaction depends on interactions among emotional well-being, partner intimacy, quality of life, and physical health(Tunuguntla & Gousse, 2006).

Sexual dysfunctions are characterized by disturbances in sexual desire and in the psychophysiological changes associated with the sexual response cycle in both men and women(American Psychiatric Association, 1994). Although male sexual dysfunction has become a growing topic in medical research and in the media(National Institutes of Health, 1993; Feldman, *et. al.,* 1994; Boolell, 1996; Rosen, *et. al.,* 1997; Basson, *et. al.,* 2000; Ponholzer, 2005), not much attention has been paid to the sexual problems of women until lately. In 1998, the "International Consensus Conference of Female Sexual Dysfunction(FSD)," convened by the American Foundation for Urologic Diseases, developed an international model of definitions and classifications of FSD. As a result, the conference report suggests that epidemiological research on the prevalence, predictors, and outcomes of FSD is urgently needed(Basson, *et. al.,* 2000). Since then, the research interests and demands for clinical services in this subject have been increased. However, despite the increased demands for clinical services and the potential impact of these disorders on interpersonal relationships and quality of life(Morokoff & Gillilland, 1993; Fugl-Meyer, *et. al.,* 1997), epidemiologic data is relatively scant.

One study by Edward, *et. al.*(1999) in the United States has shown that sexual dysfunction in the general population is more prevalent in women(43%) than men(31%). FSD is considered to be complex and multifactorial having a negative impact on female sexuality and quality of life(Ramage, 2004). Blümel, *et. al.*(2004) stated that FSD is the result of a combination of biological, psychosocial, and cultural factors. It can arise from physical conditions, psychological factors(e.g., unsatisfactory interpersonal relationships or psychiatric illnesses), medications(e.g., antihypertensives, antipsychotics, and antidepressants), surgery, hormone treatments, and menopause(Basson, *et. al.,* 2003).

Sexual dysfunction directly related to ovarian hormone loss includes dyspareunia, vaginismus, inability to lubricate adequately with sexual arousal, postcoital bleeding, pain, dysuria, urethritis, and cystitis(Bachman, 1995; McGraw, 1991). Indirect consequences of ovarian hormonal loss on sexuality include changes of body contour, which often results in perceived loss of sexual attractiveness, loss of fertility, and menopausal symptoms, which adversely affect overall quality of life and sexual function(Bachman, 1995; Blümel, 2004). Cayan, *et. al.*(2004) reported the presence of lower educational level, chronic diseases, multiparity, and menopausal status as important risk factors that may cause sexual dysfunction in Turkish women. Laumann, *et. al,*(1999) reported that FSD risk factors in a national probability sample of 1,749 women in the United States were age, nonmarital status, sexual trauma, health problems, urinary tract infections, falling household income, low educational attainment, stress, and emotional problems. In a study by Ponholzer, *et. al.*(2005) with 703 Austrian women, risk factors associated with FSD included age, desire, partner conflicts, and psychological stress.

Meston(1997) points out that psychological factors influencing sexuality include the nature of interpersonal relationships such as marital conflict, intimacy and communication problems, lack of trust, mismatches in sexual desire, boredom, and poor sexual technique, and increased stressful life events such as the death of a spouse, loss of a job or social status, deterioration of supportive networks, and finance-related family problems. Epidemiological and clinical studies show that depression is also associated with impairments of sexual function and satisfaction(Schrener, Schiavi, 1986; Abdo, Oliveira, *et. al.,* 2004; Baldwin, 2001; David, 2001). Additionally, stressful life event and marital conflict(Lee, 1998; Blümel, 2004) have been reported as related factors of FSD. Otherwise, *et. al.*(2000) reported that positive sexual attitude and sexual knowledge could increase sexual function.

Edward, *et. al.*(1999) examined sexual behaviors using the National Health and Social Life Survey, and reported a strong association between sexual dysfunction and impaired quality of life. Rosen(2002) and Basson, *et. al,*(2000) stressed the high prevalence of female sexual problems and their frequent associations with personal distress and impaired quality of life. However, approximately 20% of women in the study by Edward, *et. al.*(1999) had consulted their sexual problems with medical professionals. This finding may suggest that most people have less severe problems and are unlikely to be qualified for a medical diagnosis. On the other hand, the study by Dunn, *et. al.*(1998) in the United Kingdom showed that 52% of 979 women with sexual problems would like to seek help but only 1 out of 10 women received such help. This finding implies that a large portion wants to get professional assistance, but only a small portion actually seeks

medical help. Studies show that people with certain cultures are reluctant to attend sessions and discuss sexual matters openly(Ahmed & Bhugra, 2004).

Western societies are more open to sexual matters than eastern societies including Korea. Although professional and public interests about sexual dysfunction are recently increasing in Korea, only limited descriptive studies assessing the prevalence of FSD or FSD-related factors have been conducted(Son, *et. al.,* 2008). Korean society conceals sexual issues, especially in married couples wherein sexual problems are considered as part of their privacy, and this may cause extramarital intercourse, marital conflict, and divorce. Therefore, the purpose of this study was: a) to describe sexual function according to women's demographic characteristics, b) to describe sexual function according to women's medical history, and c) to identify and evaluate factors related to sexual dysfunction in Korean women.

II. METHODS

1. Sample and Settings

A cross-sectional descriptive study was conducted to identify the prevalence and factors related to FSD. Five hundred fourteen women who lived in Seoul, Daegu, Pusan, Ulsan, and Kyoung Sang participated in this study. Included subjects were community-dwelling women who were married, 20 years and older, and sexually active at the time of study. Considering privacy and convenience, subjects completed a set of questionnaire at home or church. The study visit took about 10 to 30 minutes per subject.

2. Measures

1) Demographic data

Demographic characteristics were assessed including age, education, length of marriage, religion, occupation, and family income. Medical history was also assessed including menstruation, venereal disease, number of vaginal delivery and abortion, hormonal therapy, perceived health state, presence of disease, and medication.

2) Female sexual function

Female sexual function was assessed using a 6-item, 5-point Likert-type Female Sexual Function Index(FSFI, Rosen, *et. al.,* 2000). The FSFI has been translated into Korean and modified after performing a pre-test study with 116 Korean women(Kim, *et. al.,* 2002). It assesses sexual desire, arousal, lubrication, orgasm, satisfaction, and pain. The higher total score represents the higher sexual function. In this study, the Cronbach's alpha was .80.

3) Sexual distress

Sexual distress was measured using a 5-item, 5-point Likert-type Female Sexual Distress Scale(FSDS & Derogatis, 1997). The FSDS has been translated into Korean by Han, *et. al.*(2004) and modified after performing a pre-test study with 104 Korean women. The higher total score represents the severer degree of sexual distress. In this study, the Cronbach's alpha was .74.

4) Sexual concept

Sexual attitude was measured using a 12-item, 4-point Likert-type Sexual Concept Scale(Kim, 1997). The total scores range from 12 to 48 with higher scores indicating positive sexual attitude. In this study, the Cronbach's alpha was .75.

5) Depression

Depression was measured using a 30-item, 4-point Likert-type Korean Depression Scale(KDS, *et. al.,* 2003). The KDS is a self-report questionnaire that examines psychosocial characteristics, moods, psychosomatic symptoms, and needs. The total scores range from 30 to 120 with higher scores indicating the severer degree of depression. In this study, the Cronbach's alpha was .92.

6) Marital adjustment scale

Marital adjustment was measured using an 8-item, 4-point Likert-type Marital Adjustment Scale(Spanier, 1976). The total scores range from 8 to 32 with higher scores indicating good marital adjustment. In this study, the Cronbach's alpha was .90.

7) Crisis scale

Crisis was measured using an 8-item, 4-point Likert-type Middle-age Crisis Scale(Kim & Yoon, 1991). The total scores range from 8 to 32 with higher scores indicating the severer degree of crisis. In this study, the Cronbach's alpha was .90.

8) Stressful life event

Stressful life event was measured using a 14-item, 4-point Likert-type Stressful Life Event Scale(Lee, 1984). The higher total scores represent the higher degree of stressful life event. In this study, the Cronbach's alpha was .85.

3. Data Analysis

Descriptive statistics were used to assess demographic characteristics, and all variables served as a basis for subsequent analyses. The relations between sexual function and demographic characteristics and medical history were analyzed using t-test and ANOVA. In addition, the relations between sexual dysfunction and its identified related factors were examined using correlations and multiple regression analyses. All analyses were conducted using the IBM SPSS Statistics, version19.0.

III. RESULTS

Subject characteristics and medical history are presented in Table 1. The mean(SD) of the FSFI in Korean women was 20.25(4.97), and ranged from 7 to 29. The range of age was from 22 to 59 years. Almost half of the sample(48.4%) attained at least college level of education; 47.1% were employed; 85.2% reported that they were currently in their menstruation state; 78% of the sample evaluated their current subjective health status as good.

There were significant differences in age, education, menstruation, type of contraception, perceived health state, number of vaginal abortion, presence of disease, and medication use. FSD scores were significantly higher in women with older age($p<.000$), low education($p<.000$), menopause status($p<.000$), no contraception($p=.013$), poor health status($p=.011$), antihypertensive

medications use(p<.000), 2 or more vaginal abortions(p=.017), and presence of disease(p=.001). However, no significant differences were observed in religion(p=.124), employment(p=.374), income(p=.105), presence of previous pelvic surgery(p=.998), presence of venereal disease(p=.084), number of vaginal delivery(p=.216), hormonal therapy(p=.836), and spouse's health state(p=.268).

<Table 1> Relationship between Sexual Function and Demographic Characteristics and Medical History(N=514)

Characteristics	Class	Frequency (%)	Mean(SD)	t	p-value
Age	20~29	37(7.2)	19.87(4.08)	9.606	.000**
	30~39	127(24.7)	21.78(4.18)		
	40~49	257(50.0)	20.14(4.50)		
	50~59	93(18.1)	18.63(4.37)		
Education	Below middle school	74(14.4)	18.31(5.07)	11.476	.000**
	High school	191(37.2)	20.00(4.34)		
	College and above	249(48.4)	21.03(4.21)		
Religion	Christian	198(38.5)	19.71(4.52)	1.818	.124
	Catholic	47(9.1)	19.69(4.57)		
	Buddhism	180(35.1)	20.77(4.25)		
	Other	10(1.9)	21.23(4.53)		
	None	79(15.4)	20.66(4.72)		
Employment	Full-time	242(47.1)	20.51(4.41)	0.986	.374
	Part-time	34(6.6)	19.54(4.50)		
	Unemployed	238(46.3)	20.09(4.55)		
Monthly income (10,000 won)	≤99	73(14.2)	19.86(4.40)	1.832	.105
	100~199	92(17.9)	19.44(4.26)		
	200~299	150(29.2)	20.71(4.63)		
	300~399	93(18.1)	20.97(4.55)		
	400~499	53(10.3)	20.41(4.15)		
	≥500	53(10.3)	19.49(4.48)		
Menstruation	Pre-menopause	438(85.2)	20.61(4.36)	19.342	.000**
	Post-menopause	76(14.8)	18.20(4.63)		
Presence of previous pelvic surgery	None	467(90.9)	20.25(4.54)	0.002	.998
	Hysterectomy	46(8.9)	20.29(3.90)		
	Anti-incontinence surgery	1(.2)	20.25(0)		
Presence of venereal disease	Yes	61(11.9)	19.32(4.56)	2.990	.084
	No	453(88.1)	20.38(4.46)		
# of vaginal delivery	None	207(40.3)	19.92(4.45)	1.493	.216
	1	67(13.0)	20.47(4.01)		
	2	204(39.7)	20.66(4.70)		
	≥3	36(7.0)	19.33(3.98)		
Contraception	None	260(50.6)	19.70(4.64)	3.199	.013*
	Condom	85(16.5)	21.67(3.87)		
	Loop	72(14.0)	20.40(4.24)		
	Oral pill	18(3.5)	20.29(3.48)		
	Calendar method	79(15.4)	20.31(4.64)		

<Table 1> Relationship between Sexual Function and Demographic Characteristics and Medical History(Continue)

(N=514)

Characteristics	Class	Frequency (%)	Mean(SD)	t	p-value
# of vaginal abortion	None	185(36.0)	20.43(4.59)	4.098	.017*
	1	198(38.5)	20.71(4.11)		
	≥2	131(25.5)	19.31(4.73)		
Hormonal therapy	Yes	18(3.5)	20.02(5.21)	0.180	.836
	No	478(93.0)	20.28(4.45)		
	Discontinued	18(3.5)	19.68(4.74)		
Perceived health state	Very healthy	65(12.5)	21.27(5.38)	4.552	.011*
	Healthy	401(78.0)	20.27(4.19)		
	Poor	48(9.3)	18.72(5.13)		
Spouse's health state	Very healthy	89(17.3)	20.43(5.74)	1.319	.268
	Healthy	376(73.2)	20.34(4.20)		
	Poor	49(9.5)	19.27(3.86)		
Presence of disease	None	412(80.1)	20.69(4.29)	3.436	.001**
	UTI	10(1.9)	18.03(5.04)		
	DM	2(.4)	19.00(5.66)		
	Heart disease	8(1.6)	18.25(3.99)		
	Hypertension	25(4.9)	18.48(5.50)		
	Rheumatoid arthritis	22(4.3)	19.41(3.39)		
	Thyroid disease	13(2.5)	19.29(4.95)		
	Lung disease	2(.4)	12.00(5.66)		
	Depression	20(3.9)	17.78(5.20)		
Medication	None	408(79.4)	20.68(4.27)	5.084	.000**
	Anti-hypertensive drug	26(5.1)	17.86(5.48)		
	Thyroid drug	11(2.1)	21.82(2.91)		
	Psychiatric drug	5(1.0)	15.20(3.83)		
	Anti-ulcer drug	16(3.1)	19.34(4.42)		
	Others	48(9.3)	18.65(5.01)		

Pearson's correlation coefficients revealed the significant results in sexual distress(r=-.374, p<.000), sexual attitude(r=.298, p<.000), degree of depression(r=-.292, p<.000), marital adjustment(r=.300, p<.000), crisis(r=-.288, p<.000), and stressful life event(r=-.101, p<.022) according to the FSD score(<Table 2>). Depression showed significant negative correlations with the following variables: self-concept, school adjustment, friend's support, teacher's support, parental acceptance, autonomy, and family satisfaction.

Table 3 shows the result of the multiple regression analysis that examined the potential predictors of FSD. Among the independent variables, sexual distress(β=-.426, p=.000), sexual attitude(β=.261, p=.000), and crisis(β=-.200, p=.000) were found to be significantly associated with FSD.

<Table 2> Correlations between Factors

	Sexual dysfunction	Sexual distress	Sexual attitude	Depression	Marital adjustment	Crisis
Sexual distress	-.374 (.000)**					
Sexual attitude	.298 (.000)**	-.017 (.695)				
Depression	-.292 (.000)**	.295 (.000)**	-.152 (.001)**			
Marital adjustment	.300 (.000)**	-.306 (.000)**	.294 (.000)**	-.374 (.000)**		
Crisis	-.288 (.000)**	.264(.000)**	-.144 (.001)**	.624 (.000)**	-.348 (.484)	
Stressful life event	-.101 (.022)*	.248 (.000)**	.023 (.604)	.302 (.000)**	-.116 (.008)**	.251 (.000)**

<Table 3> Multiple Regression Analysis: Factors Influencing Female Sexual Dysfunction(R^2: 0.25)

Variables	β	t	p-value
Sexual distress	-.426	-.197	.000
Sexual attitude	.261	6.918	.000
Crisis	-.200	-4.067	.000

IV. DISCUSSION

This study examined sexual dysfunction in Korean women and its related factors. The findings of this study revealed that age, length of marriage, education, menstruation, sexual attitude, marital adjustment, and crisis may influence FSD. Our study results are consistent with previous study findings conducted by Edward, *et. al.*(1999). The authors examined adult sexual behaviors in the United States, and found a greater incidence of sexual dysfunction problems in adults with older age, in widowed and divorced women, in subjects with lower education and poor health state.

Edward, *et. al.*(1999) found that FSD was significantly higher among subjects in 50s than those in 30s. In comparison, Son, *et. al.*(2008) found that FSD problems were less distressful to younger women. Furthermore, sexual difficulties were associated with a number of biological, medical, and psychological risk factors, and increased markedly with aging(Chang, 1996; Abdo, *et. al.*, 2004). Cayan, *et. al.*(2004) suggested that the prevalence of FSD including desire, arousal, lubrication, orgasm, satisfaction, and pain problems increased with age.

High educational attainment was negatively associated with the experience of sexual dysfunction

for women. Edward, *et. al.*(1999), Buehler(2006), and Cayan, *et. al.*(2004) reported that women with lower educational attainment reported less pleasurable sexual experience and increased level of sexual anxiety.

After menopause, sexual dysfunction increased, as like most previous research results revealed(Blümel, 2004; Cayan, *et. al.*, 2004). Menopause might be considered as perceived loss of sexual attractiveness and fertility, which might adversely affect overall quality of life and sexual function(Bachman, 1995).

The prevalence of FSD varies significantly across marital status. Premarital and postmarital(divorced, widowed, or separated) statuses are associated with elevated risk of experiencing sexual problems. Thus, married women and men are clearly at lower risk of experiencing sexual problems compared to non-married counterparts. However, postmarital women's sexual activities involve higher rates of partner turnover and periodic spells of sexual inactivity. This instability, coupled with inexperience, generates stressful sexual encounters and provides the basis for sexual dysfunction.

Unexpectedly, presence of previous pelvic surgery, venereal disease, number of vaginal delivery and number of vaginal abortion were not related to FSD. This means that sexual satisfaction may be more related to other psychosocial factors than physical factors. Moreover, our results showed no significant difference on employment, which was in contrast to Wylie's(2007) study of women from the United Kingdom, France, and Germany using the Women's International Survey on Health and Sexuality that reported unemployment as one of the common predictors of sexual problems in women.

There were significant relationships between FSD and sexual distress, sexual attitude, depression, marital adjustment, crisis, and stressful life event. Also sexual distress was the most powerful predictor of FSD. In the study by Edward, *et. al.*(1999), there were clear associations between symptoms of sexual dysfunction and health or lifestyle issues. Low sexual desire was more common among subjects who had experienced significant self-described emotional stress. Clearly, a history of emotional distress, social problems, or partner difficulties increased the risk of sexual dysfunction(Cain, *et. al.*, 2003). These findings indicate that emotional and stress-related problems among women generate elevated risk of experiencing sexual dysfunction. While we caution that the causal order of this relationship is uncertain, these results suggest that psychosocial disturbances affect sexual functioning. This does not imply that the impact of poor health is negligible; in fact, the opposite is demonstrated since age, health problems, and use of medications result in elevated risk of FSD occurrence. Rather, both physiological and psychological

statuses are independent factors that may affect sexual functioning.

This study has some limitations that should be mentioned. We measured FSD using only 6 items from the FSFI(Rosen, *et. al.*, 2000). Because there is no previous study that used the same instrument, the degree of Korean FSD in this study can be used as a basis for comparison. Further studies should be conducted using internationally accepted standard tools with larger random samples.

In summary, the findings of this study reveal that sexual function is higher among women with good subjective health status, positive sexual attitude, good marital adjustment, and with no sexual distress, depression, crisis, and stressful life event. Sexual functioning is an important aspect of quality of life or well-being in women. Women's sexual function is highly contextual; many etiological factors including physical, psychological, and interpersonal, should be not only evaluated but also included in the diagnosis(Basson, *et. al.*, 2003). Paying attention to the emotional and relational contexts of female patients is also important in assessing FSD. The evaluation and treatment of FSD should include a psychosexual evaluation and, if needed, patients should be referred to a psychotherapist. De Kruiff, *et. al.*(2000) recommended that the investigation of subtypes of FSD, vaginismus, and dyspareunia should consist of a structured interview or questionnaire, physical examination, and subjective evaluation of physical examination. A systematic evaluation and treatment work frame of FSD should be developed within the coming years for all affected patients. Accordingly, health care providers need to carefully investigate the sexual life of women with poor subjective health status, depression, crisis, and stressful life event. Sexual difficulties are also a significant source of emotional and relationship dissatisfaction. Women with sexual dysfunction should be evaluated for these FSD-related factors in history taking, and this information would be a useful basis for further studies of FSD.

V. CONCLUSIONS

This study is the first population-based assessment of FSD in Korea. The findings of this study suggest that sexual function is higher in women with good subjective health status, positive sexual attitude, good marital adjustment, and with no sexual distress, depression, crisis, and stressful life event. In addition, this study results indicate that FSD is influenced by both health-related and psychosocial factors. While the causal relationship between sexual dysfunction and quality of life concomitants remains to be further investigated, the strong associations

between the variables observed in this study suggest that sexual dysfunction is a largely uninvestigated yet significant public health problem.

Recent advances in the area of erectile dysfunction treatment may increase quality of life in some men. However, as decreased well-being is strongly associated with female sexual problems, researchers should focus on identifying the consequences of FSD as well as developing appropriate interventions. Considering the fact that people having sexual problems rarely receive medical care, service delivery efforts should be augmented to target these high risk populations. With the strong association between sexual dysfunction and impaired quality of life, FSD should be recognized as a significant public health concern.

By comprehensively addressing the factors related to FSD and comparing the impact of each variable on FSD, this study may contribute to designing an appropriate FSD prevention strategy in tune with the particular characteristics and problems of women. Based on this study, future studies should develop educational programs appropriate for Korean settings to decrease and prevent sexual dysfunction among Korean women. In addition, the development of more comprehensive nursing interventions reflecting various predictors of FSD is recommended.

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