

*Original Article***Frequency and Correlates of Sexual Dysfunction among Women Attending Outpatient Gynecological Clinics**

Ali Hamidi Madani ^{1*} Seyedeh Nargess Tavakoli Lahijani ² Alireza Farzan ³
Samaneh Esmaeili ⁴ Zahra Hamidi Madani ⁵

1. Professor of Urology, Urology Research Center, Razi Hospital, School of Medicine, Guilan University of Medical Sciences
2. General Physician, Urology Research Center, Razi Hospital, School of Medicine, Guilan University of Medical Sciences
3. Urologist, Urology Research Center, Razi Hospital, School of Medicine, Guilan University of Medical Sciences
4. Medical Researcher, Urology Research Center, Razi Hospital, School of Medicine, Guilan University of Medical Sciences
5. Gynecologist, Urology Research Center, Razi Hospital, School of Medicine, Guilan University of Medical Sciences

*Correspondence to: Ali Hamidi Madani
hamidimadani@gmail.com

(Received: 1 Mar. 2018; Revised: 20 May. 2018; Accepted: Jul. 2018)

Abstract

Background and purpose: Female sexual dysfunction (FSD) is a high-frequent multifactorial problem and may have a major effect on the quality of life. This study was conducted to investigate frequency of female sexual dysfunction and its correlated factors in women attending outpatient gynecological clinics.

Materials and Methods: A total of 300 married women attending four gynecological outpatient clinics in Rasht, Iran were assessed. Sexual function was evaluated through Female Sexual Function Index (FSFI) questionnaire. Demographic characteristics, obstetric and surgical history, some medical conditions and body mass index (BMI), life style variants, knowledge about sexuality, and help-seeking behavior were assessed by a self-created questionnaire. Statistical analysis included Fisher exact test Chi-square and Spearman's correlation coefficients.

Results: 76.67% of all women in this study reported sexual dysfunction in at least one domain. The total frequency of FSD according to the low total FSFI score was 18.3%. The most frequent dysfunction was desire disorders (63.7%). The frequencies of other sexual disorders were as follows: pain disorders (35.7%), arousal disorders (34.7%), orgasmic disorders (16%), lubrication disorders (10.7%), and satisfaction disorders (10.7%). Age, number of deliveries, number of children, number of abortions, menopause, mode of delivery, episiotomy, anemia, psychiatric disease, psychotropic medication use, poor sexual knowledge, and husband's age showed a significant statistical correlation with low total FSFI score. Women who thought they had a sexual problem involved 15.3% of all subjects, of which 67.4% have had no professional consultation about it.

Conclusion: FSD is highly frequent in women referred to gynecological clinics. Thus, more attention to the state of women's sexual health is recommended.

Key words: Female Sexual Dysfunction; Epidemiology; Correlated Factors; FSFI

Citation: Madani AH*, Tavakoli SN, Farzan AR, Esmaeili S, HamidiMadani Z. Frequency and Correlates of Sexual Dysfunction among Women Attending Outpatient Gynecological Clinics. Iran J Health Sci. 2018; 6 (3): 21-35.

1. Introduction

According to World Health Organization (WHO), sexual rights include the right of all individuals to achieve the highest attainable standard of health in relation to sexuality and to pursue a satisfying, safe, and pleasurable sexual life (1). This shows that sexual function is a legitimate aspect of medicine.

Female sexual dysfunction (FSD) includes reduced interest/incentives for sexual engagement, difficulties with becoming subjectively and/or genitally aroused, difficulties in triggering desire during sexual engagement, orgasm disorder, and sexual pain (2). There is a wide variation in published prevalence estimates of the FSD. In fact, prevalence depends on case definition, characteristics of the study population, and time frame of the prevalence estimates (3,4). Female sexual dysfunction has been defined as a multifactorial condition with anatomic, physiologic, medical, psychological, and social components (5). Despite the high prevalence of FSD that seems even more than male sexual dysfunction, less attention has been paid to female sexual problems.

Due to the lack of enough and comprehensive studies in the field of women's sexual dysfunction in Iran and despite some traditional resistance to express and treat this problem in our country, this study aimed to investigate the frequency of FSD and the factors contributing to it.

2. Materials and methods

In this cross-sectional study, a total of 300 married women above 18 years old (range of age 18-61) referred to four major gynecological outpatient clinics in Rasht, north of Iran, were assessed. The sampling method was simple random. To avoid bias

resulting from the shame of talking about sexual concerns, the researchers used a self-administered anonymous questionnaire to assess the sexual function, so all participants were supposed to be literate. Also, the women living apart from their husband were not included in the sample.

The Female Sexual Function Index (FSFI) standard questionnaire (6), which has been used in many studies in Iran and its validity and reliability have been verified by Iranian researchers, was used to assess the key dimensions of female sexual function. This is a 19-item standardized questionnaire which evaluates six domains of female sexual function including desire (2 items), arousal (4 items), lubrication (4 items), orgasm (3 items), satisfaction (3 items), and pain (3 items) during sexual intercourse. Based on adjusting the score of the domains, the maximum score for each domain was 6, and for the total scale 36. The scores <65% of maximum achievable score in each domain were considered as sexual dysfunction in that domain. The minimum score for desire was 1/2, but for arousal, lubrication, orgasm, and pain, it was 0, and the satisfaction domain was 0.8. The minimum of the total score was also 2 (7). The total score of FSFI questionnaire was obtained by adding the six domain scores, and a total score <65% of maximum achievable score was considered as female sexual dysfunction.

A self-created questionnaire for data collection was administered regarding the possible correlates of female sexual dysfunction. Based on this questionnaire, the participants were interviewed about demographic characteristics, obstetric, and surgical history, some medical conditions, life style variants, and knowledge about sexuality. Weight and height of the participants were also measured in order to

calculate the body mass index (BMI). Another self-created questionnaire was also used to assess the attitudes of women on their sexual matters in addition to their help seeking behavior.

It should be mentioned that the present study was initially approved by the Research Ethics Committee of Guilan University of Medical Sciences (No. I.GUMS.REC.1397.204). At the same time, all participating women took part in this study after giving informed written consent. The statistical analysis was performed using the computer statistical package (SPSS/11.0). Chi-square, Fisher's

exact test, and paired sample t-test were used to analyze the collected data. A P-value of less than 0.05 was considered to be statistically significant.

3. Results

The mean age of women in this study was 31.27 ± 8.68 years (range 18-61), most were housewives and/or unemployed (66.7%), had an education level less than high school (50.7%), had no history of infertility (97.3%), and were not postmenopausal (95%)(Table1).

Table 1. Demographic characteristics of the subjects

Characteristic	%
Age(year)	31.27 ± 8.68 *
20 or less	2.7
21-30	56.7
31-40	24
41-50	13.3
51 or more	3.3
Occupational Status	
housewife/unemployed	66.7
employed	33.3
Educational Level	
high school or less	50.67
university degree	49.33
Menstruation Status	
Premenopause	95
menopause	5
History of Infertility	
presence	2.7
absence	97.3
History of Delivery	
presence	53.3
absence	46.7
BMI	25.51 ± 4.09 *
19 or less	4.7
19-25	42.3
25-30	40.3
more than 30	12.7
Physical Activity	
presence	44.3
absence	55.7
History of Smoking	
presence	3
absence	97

* Mean \pm SD

76.67% of all women in this study reported at least one sexual dysfunction. FSD, as we defined it regarding the total FSFI score, was found in 18.3% of the women. The frequency of different types of dysfunction, such as desire disorders, arousal disorders, lubrication disorders, orgasmic disorders, satisfaction disorders, and pain disorders were 63.7%, 34.7%, 10.7%, 16.0%, 10.7% and 35.7%, respectively. Table 2 shows the mean scores in each domain.

Table 2. Mean score of each sexual domain

Domain	mean score
Desire	3.77±0.95
Arousal	4.07±1.07
Lubrication	4.87± 1.06
Orgasm	4.57± 1.13
Satisfaction	5.05±0.99
Pain	4.18± 1.49

Tables 3, 4, 5, and 6 show the correlation between different aspects of female sexual dysfunction and the characteristics studied in detail.

There was a significant statistical correlation between DD and age ($p=0.001$), number of deliveries ($p=0.001$), number of children ($p=0.0001$), mode of delivery ($p=0.05$), contraception method ($p=0.014$), husband's age ($p=0.0001$), and trying to get knowledge about sexuality ($p=0.027$). The conditions in which DD was more frequent were: ages 51 years or more, having a history of at least two deliveries, having at least two children, having a history of both vaginal and cesarean deliveries, using tubal ligation or vasectomy as the contraception method, and a husband in the age range of 41 to 50 years. DD was also more frequent in women who did not have any experience of getting knowledge about sexuality.

There was documented a significant statistical correlation between AD and age, number of deliveries ($p=0.001$), number of children, menstruation status, mode of delivery, episiotomy, anemia, psychiatric disease, psychotropic medication use, and husband's age. The conditions in which AD was more frequent were: ages 51 years or more, having a history of at least two deliveries, having at least two children, post-menopausal status, having a history of both vaginal and cesarean deliveries, having a positive history of episiotomy, presence of anemia, presence of psychiatric disease, presence of psychotropic agents use, husband age 51 years or more.

There was a significant statistical correlation between LD and age, age at marriage, age at first intercourse, number of children, menstruation status, episiotomy, hypertension, psychiatric disease, psychotropic medication use, antihypertensive use, and husband's age. The conditions in which LD was more frequent were: ages 51 years or more, women with age at marriage and/or age at the first intercourse was 18 or less, having at least two children, postmenopausal status, having a positive history of episiotomy, presence of hypertension and/or psychotropic disease, using psychotropic agents, using antihypertensive, and husband who is 51 years or more.

There was a significant statistical correlation between OD and age, number of deliveries, number of children, menstruation status, mode of delivery, contraception method, psychiatric disease, and husband's age. The conditions in which OD was more frequent were: ages 51 years or more, having a history of at least two deliveries, having at least two children,

postmenopausal status, having just vaginal deliveries, using OCP as the contraception method, presence of psychiatric disease, and having a husband who is 51 years or more.

There was a significant statistical correlation between OD and number of children, episiotomy, anemia, psychiatric disease, psychotropic medication use, and husband's occupational status. The conditions in which SD was more frequent were: having at least two children, having a positive history of episiotomy, presence of anemia, presence of psychiatric disease, using psychotropic agents, and employment of the husband.

There was also found a significant statistical correlation between PD and age, menstruation status, psychiatric disease. The conditions in which PD was more frequent were: ages 51 years or more, postmenopausal status, and presence of psychiatric disease.

FSD, as we defined it regarding the low total FSFI score, showed a significant statistical correlation with age, number of deliveries, number of children, number of abortions, menstruation status, mode of delivery, episiotomy, anemia, psychiatric disease, psychotropic medication use, trying to get knowledge about sexuality, husband's age, and husband's occupational status. The conditions in which FSD was more frequent were ages 51 years or more, having at least two children, having a history of at least two deliveries, having a history of at least two abortions, postmenopausal status, having a history of both vaginal and cesarean delivery, having a positive history of episiotomy, presence of anemia, presence of psychiatric disease,

using psychotropic agents, absence of getting knowledge about sexuality in prior, having a husband aged 51 years or more, and unemployment of the husband.

Our study showed that 15.3% of all 300 women thought they had a kind of sexual problem. Among women who thought they had a sexual problem 67.4% had not sought any professional consultation for solving this problem. Of women who thought they had a sexual problem but had no professional consultation about it, 80.6% wanted to seek healthcare professional consultation in future, and 19.4% still did not have any plan to do it. Of women who thought they had sexual problems and also had a history of consultation with healthcare professionals about their sexual problem, 75% sought help from their gynecologist, 18.8% from their psychiatrist, and 6.2% from other healthcare professionals.

Reasons for the sexual problem stated by the women who thought they had a sexual problem were personal psychiatric disorders (29.6%), poor knowledge about sexuality (20.4%), husband's sexual dysfunction (12.9%), conflicts in their relationship (14.8%), traumatic genital injuries (9.4%), and other reasons including unknown reasons for example (12.9%).

The women who thought they had a sexual problem and have had sought professional consultation previously, stated the following reasons for their help seeking: eagerness to have a satisfying sexual intercourse (46.1%), distress about abnormality (32.7%), being under pressure from their husbands (15.4%), and other reasons (5.8%).

Table 3. Frequency of dysfunction items by demographic characteristics

characteristic	DD %	p-value	AD %	p-value	LD %	p-value	OD %	p-value	SD %	p-value	PD %	p-value	FSD %	p-value
Age (year)														
20 or less	62.5	0.001*	37.5	0.001*	12.5	<0.0001*	0	0.0001*	12.5	0.466	12.5		12.5	<0.0001*
21-30	54.7		28.2		7.6		11.8		8.8		34.1		14.1	
31-40	69.4		31.9		8.3		12.5		9.7		30.6		12.5	
41-50	85		57.5		17.5		35		17.5		45		35	
51 or more	90		70		50		50		20		80	0.012*	70	
occupational status														
unemployed /housewife	63	0.734	34	0.731	12	0.29	16	1	13	0.075	34	0.394	20	0.291
Employed	65		36		8		16		6		39		15	
husband's age (year)														
21-30	61.6	0.0001*	32.1	0.004*	8	0.007*	10.7	0.0001*	8	0.308	31.2		14.3	0.0001*
31-40	54		27.4		7.3		12.1		10.5		33.1		12.1	
41-50	88.2		50		17.7		26.5		11.8		50	0.114	32.4	
51 or more	83.3		56.7		26.7		40		20		46.7		43.3	
husband's occupational status														
employed	63.1		34.2		10.2		15.6		9.8		34.9		17.3	

Table 4. Frequency of dysfunction items by some characteristics

Characteristic	DD		AD		LD		OD		SD		PD		FS D	
	%	p-value	%	p-value										
smoking history														
presence	55.6	0.728	33.3	0.932	11.1	0.965	11.1	0.685	22.2	0.254	33.3	0.882	22.2	0.672
absence	63.9		34.7		10.7		16.2		10.3		35.7		18.2	
BMI														
19 or less	42.9	0.114	28.6	0.895	0	0.433	14.3	0.365	0	0.298	21.4	0.667	14.3	0.498
19-25	59.1		33.1		10.2		11.8		11		34.4		15.7	
25-30	68.6		36.4		10.7		19.8		13.2		38		19	
more than 30	71.1		34.7		15.8		18.4		5.3		34.2		26.3	
physical activity														
rarely-never	62.3	0.881	35.9	0.077	10.2	0.347	18	0.279	10.2	0.115	40.1	0.255	19.2	0.061
once/week	68.2		18.2		4.5		6.8		2.3		25		4.5	
several times/week	65.2		39.4		15.2		15.2		16.7		33.3		24.2	
daily	60.9		43.5		13		21.7		13		30.4		21.7	
previous knowledge about sexuality														
presence	55.9	0.027	29.7	0.172	9.3	0.573	13.6	0.421	8.5	0.346	33.9	0.624	12.7	0.048
absence	68.7		37.9		11.5		17.6		12.1		36.8		22	
psychotropic medication use														
presence	80	0.337	100	<0.0001	70	<0.0001	40	0.058	50	0.02	60	0.175	80	<0.0001
absence	63.1		32.4		8.6		15.2		9.3		34.8		16.2	
antihypertensive use														
presence	80	0.715	50	0.32	40	0.002*	30	0.219	20	0.331	50	0.336	40	0.09
absence	63.1		34.1		9.7		15.5		10.3		35.2		17.6	
age at marriage (year)														
18 or less	62.3	0.815	34	0.905	18.9	0.047	17	0.83	13.2	0.509	35.8	0.976	24.5	0.199
more than 18	64		34.8		8.9		15.8		10.9		35.6		17	
age at first intercourse (year)														
18 or less	62.7	0.815	34	0.905	19.6	0.042	17.6	0.72	11.6	0.78	35.3	0.951	25.5	0.147
more than 18	63		34.8		8.8		15.7		10.4		35.7		16.9	

Table 5. Frequency of dysfunction by obstetric characteristics

Characteristic	DD %	p-value	AD %	p-value	LD %	p-value	OD %	p-value	SD %	p-value	PD %	p-value	FSD %	p-value
4														
Menstrual Cycle(+)	62.5	0.09	33	0.01*	9.1	0.002*	14	0.001*	9.8	0.063	33.7	0.004*	16.1	0.04*
Menopause	86.7		66.7		40		53.3		26.7		73.7		60	
Infertility History														
Presence	75	0.71	62.5	0.13	12.5	0.599	12.5	0.78	12.5	0.599	37.5	0.91	37.5	0.16
Absence	63.4		33.9		10.6		16.1		10.6		35.6		17.8	
Number of abortions														
0	63.4	0.421	32.5	0.267	10.7	0.985	13.6	0.061	9.5	0.148	35.8	0.83	16.5	0.042*
1	90.6		43.5		10.9		26.1		13		37		21.7	
2 or more	81.8		45.5		9.1		27.3		27.3		27.3		45.5	
Number of deliveries														
0	55.8	0.001*	29	0.001*	8.7	0.074	10.1	0.001*	7.2	0.06	33.3	0.142	13	0.04*
1	60.7		28.1		7.9		13.5		10.1		31.5		11.2	
2 or more	82.2		53.4		17.8		30.1		17.8		45.2		37	
Number of children														
0	55.7	0.04*	28.6	0.001*	8.6	0.049	10	0.04*	7.1	0.04*	33.6	0.062	12.9	0.04*
1	58.9		27.8		7.8		13.3		10		30		11.1	
2 or more	85.7		55.7		18.6		31.4		18.6		47.1		38.6	
mode of delivery														
no deliveries	55.8	0.05*	29	0.027*	8.7	0.188	10.1	0.033*	7.2	0.073	33.3	0.444	13	0.033*
normal vaginal	73.3		44		16		25.3		18.7		40		28	
cesarean	66.7		32.1		7.7		17.9		9		33.3		16.7	
both	77.8		66.7		22.2		11.1		11.1		55.6		33.3	
Episiotomy history														
Presence	69.8	0.369	48.8	0.039*	23.3	0.013*	25.6	0.073	23.3	0.013*	39.5	0.607	30.2	0.035*
Absence	62.6		32.3		8.6		14.4		8.6		35		16.3	
Contraception method														
None	75.4	0.014*	36.9	0.309	10.8	0.853	16.9	0.027*	10.8	0.66	44.6	0.031*	23.1	0.218
withdrawal	55.2		30.4		8.8		12.8		12.8		32.8		17.6	
OCP	58.8		52.9		11.8		47.1		5.9		47.1		29.4	
condom	60.4		37.5		10.4		16.7		6.3		31.3		14.6	
TL	100		50		21.4		21.4		21.4		50		28.6	
IUD	75		50		25		0		0		50		0	
vasectomy	100		50		0		0		50		12		50	
multiple	60		20		12		8		4		35.7		4	

Table 6. Frequency of dysfunction items by medical and surgical history

Characteristic	DD		AD		LD		OD		SD		PD		FSD	
	%	p-value												
Diabetes														
Presence	75	0.635	75	0.12	0	0.48	50	0.12	0	0.487	25	0.645	50	0.099
Absence	63		34.1		10.8		15.5		10.8		35.7		17.9	
Hypertension														
Presence	80	0.33	50	0.32	40	0.002*	30	0.219	20	0.331	50	0.336	40	0.09
Absence	63.1		34.1		9.7		15.5		10.3		35.2		17.6	
Thyroid disease														
Presence	60	0.724	25	0.347	5		5	0.165	15	0.516	35	0.949	5	0.111
Absence	63.9		35.4		11.1		16.8		10.4		35.7		19.3	
Anemia														
Presence	73.2	0.221	53.7	0.008*	12.2	0.78	24.4	0.166	24.4	0.005*	43.9	0.292	31.7	0.028*
Absence	62.2		31.7		10.4		14.7		8.5		34.4		16.2	
Renal failure														
Presence	100	0.536	0	0.546	0	0.624	0	0.536	0	0.624	50	0.671	0	0.5
Absence	63.4		34.9		10.7		16.1		10.7		35.6		18.5	
Urinary incontinence														
Presence	100	0.449	100	0.169	100	0.107	100	0.16	100	0.107	100	0.179	100	0.183
Absence	63.5		34.4		10.4		15.7		10.4		35.5		18.1	
Recurrent UTI														
Presence	44.4	0.294	55.6	0.284	33.3	0.3	33.3	0.16	11.1	0.96	66.7	0.073	44.4	0.062
Absence	64.3		34		10		15.5		10.7		34.7		17.5	
Psychiatric disease														
Presence	75	0.546	91.7	0.0001*	50	0.001*	41.7	0.028*	50	0.001*	66.7	0.031*	66.7	0.0001
Absence	63.2		32.3		9		14.9		9		34.4		16.3	*
History of pelvic surgery														
Presence	67.9	0.685	42.9	0.405	21.4	0.098	28.6	0.098	21.4	0.098	46.4	0.22	28.6	0.195
Absence	63.2		33.8		9.6		14.7		9.6		34.6		17.3	

4. Discussion

There is a wide variation in published prevalence estimates of FSD. The most frequently cited study on FSD prevalence is the one by Laumen et al. in which 43% of women reported FSD (8). In Australia, it has been reported that up to 70% of women can experience at least one type of sexual dysfunction (9). In contrast, some studies reported low prevalence of FSD (10). In our study the frequency of FSD regarding the total FSFI score was 18.3%, but 76.67% of women reported sexual dysfunction in at

least one domain. The frequency estimated in this study was influenced by the characteristics of the study population, as they were all married, literate, from an exact city, and attending four selected gynecological clinics.

According to the findings of the current study, the most frequent sexual disorder was found to be desire disorder (63.7%), which agrees with the findings of Kadri et al. (10) in Morocco, Abdo et al. in Brazil (11), Ishak et al. in Malaysia (12), whereas this result disagrees with the findings of

Ponholzer et al. in Austria (13). Of the sociodemographic data analyzed, age correlated with FSD. Except satisfaction disorders, all other aspects of sexual dysfunction correlated with age as they were more frequent in older women. Some other studies have shown that sexual dysfunction is more prevalent in older women (8). In addition to hormonal changes occurring with aging, illnesses accompanying aging may also have impact on FSD.

Socioeconomic status may also have an effect on sexual function. Using FSFI questionnaire Prado compared two groups of women from different socioeconomic levels in Brazil, and found no correlation between the educational level and/or income and sexual dysfunction (14). In contrast, Laumen et al. found FSD more prevalent in women with low educational level and low income (8). Although there was no correlation between women's occupational status and different aspects of sexual dysfunction in our study, occupational status of husband correlated with total FSFI score and sexual satisfaction as low scores in these two domains was more frequent in women whose husband was unemployed. At the same time, the educational level of women and/or their husband showed no correlation with women's sexual function.

The results also indicated that changes in ovarian function associated with menopause may affect women's sexual function due to hormonal changes and vaginal atrophy. In the current study, the researchers also found statistically significant correlation between postmenopausal status and low total FSFI score. All domains of sexual dysfunction were also correlated with postmenopausal status, except for DD and SD. One study on

a large cohort of women over 10 years have shown a decrease in sexual desire during postmenopausal period (15), but one caveat in assessment of menopause role on FSD is to investigate its independent role apart from aging effect. On the other hand, older women may have less distress about decrease in sexual function. In one other study, women of postmenopausal ages showed no difference in satisfaction in spite of less frequency of orgasm (16), which agrees with our findings. There is no definite correlation between sexual activity and method of delivery or episiotomy. In a study conducted in Austria, the researchers found no statistical correlation between mode of delivery and total FSFI score (17). Another study with the FSFI questionnaire in Turkey found a significant correlation between all domains of FSD and vaginal delivery with episiotomy in comparison with women undergoing cesarean delivery (19). In the present study, there was found a significant correlation between mode of delivery and DD, AD, OD, and total FSFI score. Dysfunction in all these domains was more frequent in women whose all deliveries were vaginal in comparison with women whose all deliveries were cesarean, but having a group of women who had experienced both vaginal and cesarean deliveries showed that the highest frequency of disorder in desire, arousal, and total FSFI score makes it difficult to compare the methods of delivery in correlation to FSD. In our study, episiotomy showed a significant correlation with AD, LD, SD, and low total FSFI score, as these disorders were more frequent in women who had a positive history of episiotomy.

Findings on the correlation between contraception methods and FSD are dissimilar in studies (19-20). In the present

study, the researchers found no correlation between total FSFI score and contraception methods; however, there was a significant correlation between contraception methods and DD, OD, and PD. Hence, according to the controversies over the effect of different contraception methods on sexual function, further studies may be beneficial.

Infertility may cause female sexual dysfunction in several possible ways. The feelings of guilt over personal responsibility for the infertility, the stress of testing, and scheduled intercourse as a part of treatment all may have a negative effect on a woman's sexual function (21). A case-control study using FSFI questionnaire found women with a diagnosis of infertility to be at higher risk for sexual dysfunction compared with women without infertility (22). Although in our study dysfunction in all domains of sexual function was more frequent in women with a positive history of infertility, the correlation was not statistically significant.

Both being overweight and obesity have been identified as risk factors for sexual dysfunction in men, but the relationship between sexual function and amount of body fat in females is still obscure (23). In our study, no statistically significant correlation was found between BMI and different domains of sexual function or the total FSFI score. Yalavi in Turkey used FSFI questionnaire to investigate the correlation between FSD and obesity, and found no correlation between total FSFI score and BMI but a negative significant correlation between OD and SD with BMI (23).

Hypertension, diabetes, and smoking are known to be correlated with male erectile dysfunction but association between these factors and female sexual dysfunction is weaker. Psychophysiological studies have

not supported any difference between increases in congestion in response to erotic stimulation or increase in subjective arousal between women with and without diabetes (24). In our study, there was found no significant correlation between diabetes and different aspects of FSD. We also found no correlation between smoking and any aspect of FSD. These findings, however, were observed to be in contrast with the findings of a recent study in Turkey which showed a correlation between diabetes type 2 and FSD. This study was performed using the FSFI questionnaire, and also found smoking as a factor which impairs FSFI scores in premenopausal women with type 2 diabetes (23). We also found no correlation between hypertension and any aspect of FSD except lubrication disorders. Low arterial perfusion as a result of atherosclerotic consequences of chronic hypertension may correlate with lubrication disorders that can be addressed better in psychophysiological studies. Anemia as a sign of systemic disease may lead to low energy and different types of sexual dysfunction. In the current study, there was also found a significant correlation between positive history of anemia and AD, SD, and low total FSFI scores. Further studies with the aid of laboratory testing will definitely help to evaluate this correlation better.

Although in our study we found no significant correlation between FSD and thyroid disease, further studies in which thyroid stimulating hormone would be evaluated in order to assess subclinical conditions may be of value. Accompanying depressive illnesses and physical disabilities in chronic disease may affect sexual function. Some studies have shown a significant correlation between chronic renal failure (CRF) and FSD (25-26).

Although no correlation was documented between CRF and FSD in the present research, more studies in this field might be needed as current studies on this issue are scarce.

Some studies reported that FSD had a significant correlation with lower urinary tract symptoms and urinary incontinence (27-28). While we found no correlation between FSD and urinary incontinence, more research in this field using a validated questionnaire may be of value to assess the urinary incontinence. Similarly, using laboratory investigations to assess the correlation between FSD and recurrent UTI may shed more light on the indistinct areas in this issue. Disease processes, such as abnormal uterine bleeding, endometriosis, urinary incontinence, and pelvic organ prolapse may have a negative impact on various parameters of sexual health. Gynecological surgery to address these common complaints may correct the pathological process. However, despite improvements in symptoms related to the disease, improvements in sexuality are not guaranteed, and occasionally, there may be deteriorations (29). Although our findings showed no correlation between any domain of sexual dysfunction and history of pelvic surgery, further studies to compare impact of different methods of surgery on FSD can be of a great value.

Female sexual response is mediated by a complex including psychological factors. In our study, the presence of psychiatric disease showed a significant correlation with low total FSFI score and all domains of sexual dysfunction except DD.

Some other studies have shown strong correlation between FSD and psychiatric disease (30-31). A number of pharmacological agents might improve or reverse the female sexual function. Our

findings showed a strong significant correlation between psychotropic agents use and AD, LD, SD, and low total FSFI score. Since some psychotropic agents, such as bupropion, may be effective on the improvement of female sexual function (32), and some may have a negative effect on it (21), further studies based on evaluation of each groups of drugs can be more helpful.

The Global Study of Sexual Attitudes and Behaviors (GSSAB) found that few men and women seek medical help for sexual problems, although these problems are highly prevalent (33). Similarly, in our study, 67.4% of women who expected to have a kind of sexual problem had no professional consultation for solving this problem in prior. Low distress level caused by sexual dysfunctions, cultural and social determinants, and seeking help from unprofessional might be some of the reasons for this pattern of help-seeking behavior. Some studies have shown that sexual dysfunctions do not necessarily make distress in all women (34-35). As we also found in our study, just a small proportion of all women thought they had a kind of sexual problem although there was a high frequency of sexual problems.

5. Conclusion

FSD is a highly frequent multifactorial problem among women, and different aspects of sexual function in women are affected by several factors. In spite of high-frequency of female sexual problems, few women seek professional help for these problems. Physicians should be trained and prepared to address this issue.

Acknowledgment

It is a pleasure to thank all who made this research possible. We show our gratitude to gynecologists who let us interview their

patients (Dr. Fariba Ajamian, Dr. Parvin Noveiri, Dr. Fariba Mirblouk, and Dr. Saeideh Sadri). Also, it should be mentioned that this study is adapted from the M.D. thesis of Seyedeh Nargess Tavakoli Lahijani.

Conflicts of interest

We (authors of this article) declare no conflict of interest among the authors for this manuscript. This research project do not also have any financial relationship with any organization.

References

1. WHO: Defining sexual health. Report of a technical consultation on sexual health, 28-31 January 2002. In Sexual health document series. Geneva: World Health Organisation; 2006:35.
2. Basson R, Wierman M, Lankveld J, Brotto L. Summary of the recommendations on sexual dysfunctions in women. *The Journal of Sexual Medicine*. 2010 Jan;7(1 Pt 2):314-26. doi: 10.1111/j.1743-6109.2009.01617.x. PubMed PMID: 20092441.
3. Hayes RD, Bennett CM, Dennerstein L, Taffe JR, Fairley CK. Are aspects of study design associated with the reported prevalence of female sexual difficulties? *Fertility and Sterility*. 2008 Sep;90(3):497-505. Epub 2007 Nov 5. PubMed PMID: 17980879.
4. Dunn KM, Jordan K, Croft PR, Assendelft WJJ. Systematic review of sexual problems: Epidemiology and methodology. *Journal of Sex & Marital Therapy*. 2002 Oct-Dec;28(5):399-422. PubMed PMID: 12378842.
5. Salonia A, Munnariz RM, Naspro R, Nappi RE, Briganti A, Chionna R, et al. Women's sexual dysfunction: a pathophysiological review. *BJU International*. 2004 May;93(8):1156-64. PubMed PMID: 15142131.
6. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsig R et al. The female sexual function index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. *Journal of Sex & Marital Therapy*. 2000 Apr-Jun;26(2):191-208. PubMed PMID: 10782451.
7. Safarinejad MR. Female sexual dysfunction in population based study in Iran: prevalence and associated risk factors. *International Journal of Impotence Research*. 2006 Jul-Aug;18(4):382-95. PubMed PMID: 16395324.
8. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: Prevalence and predictors. *JAMA*. 1999 Feb 10;281(6):537-44. PubMed PMID: 10022110.
9. Hayes RD, Dennerstein L, Bennett CM, Fairley CK. What is the "true" prevalence of female sexual dysfunctions and does the way we assess these conditions have an impact? *The Journal of Sexual Medicine*. 2008 Apr;5(4):777-87. doi: 10.1111/j.1743-6109.2007.00768.x. PubMed PMID: 18266650.
10. Kadri N, McHichi Alami KH, McHakra Tahiri S. Sexual dysfunction in women: population based epidemiological study. *Archives of Women's Mental Health*. 2002 Oct;5(2):59-63. PubMed PMID: 12510200.
11. Abdo CHN, Oliveira WM, Moreira Jr ED, Fittipaldi JAS. Prevalence of sexual dysfunctions and correlated conditions in a sample of Brazilian women--results of the Brazilian study on sexual behavior (BSSB). *International Journal of Impotence Research*. 2004 Apr;16(2):160-6. PubMed PMID: 14961047.
12. Ishak IH, Low WY, and Othman S. Prevalence, risk factors and predictors of female sexual dysfunction in a primary care setting: A survey finding. *The Journal of Sexual Medicine*. 2010 Sep;7(9):3080-7. doi: 10.1111/j.1743-6109.2010.01848.x. PubMed PMID: 20584130.
13. Ponholzer A, Roehlich M, Racz U, Temml C, Madersbacher S. Female sexual dysfunction in a healthy Austrian cohort: prevalence and risk factors. *European Urology*. 2005 Mar;47(3):366-75. PubMed PMID: 15716203.
14. Prado DS, Mota VP, Lima TI. Prevalence of sexual dysfunction in two women groups of different socioeconomic status. *Revista Brasileira De Ginecologia E Obstetricia*. 2010 Mar;32(3):139-43. PubMed PMID: 20512261.
15. Dennerstein L, Lehert P, Burger H, et al. Factors affecting sexual functioning of women in the midlife years. *Climacteric*.

- 1999 Dec;2(4):254-62. PubMed PMID: 11910659.
16. Hartmann U, Philippsohn S, Heiser K, et al. Low desire in midlife and older women: personality factors, psychosocial development, present sexuality. *Menopause*. 2004 Nov-Dec;11(6 Pt 2):726-40. PubMed PMID: 15543025.
 17. Klein K, Worda C, Leipold H, Gruber C, Husslein P, Wenzl R. Does the mode of delivery influence sexual function after childbirth? *Journal of Women's Health (Larchmt)*. 2009 Aug;18(8):1227-31. doi: 10.1089/jwh.2008.1198. PubMed PMID: 19630552.
 18. Baksu B, Davas I, Agar E, Akyol A, Varolan A. The effect of mode of delivery on postpartum sexual functioning in primiparus women. *International Urogynecology Journal and Pelvic Floor Dysfunction*. 2007 Apr;18(4):401-6. PubMed PMID: 16871432.
 19. Li RH, Lo SS, Teh DK, Tong NC, Tsui MH, Cheung KB, Chung TK. Impact of common contraceptive methods on quality of life and sexual function in Hong Kong Chinese women. *Contraception*. 2004 Dec;70(6):474-82. PubMed PMID: 15541409.
 20. Gulum M, Yeni E, Sahin MA, Savas M, Ciftci H. Sexual functions and quality of life in women with tubal sterilization. *International Journal of Impotence Research*. 2010 Jul-Aug;22(4):267-71. doi: 10.1038/ijir.2010.14. PubMed PMID: 20574432.
 21. Baram DA, Basson R. Sexuality, Sexual Dysfunction and sexual Assault In: Berek JS, Berek & Novak's Gynecology, Lippincot Williams & Wilkins, 2007; 14: 313-350.
 22. Millheiser LS, Helmer AE, Quintero RB, Westphal LM, Milki AA, Lathi RB. Is infertility a risk factor for female sexual dysfunction? A case-control study. *Fertility and Sterility*. 2010 Nov; 94(6):2022-5. doi: 10.1016/j.fertnstert.2010.01.037. PubMed PMID: 20206929.
 23. Yavali GF, Tekekoglu S, Akin F. Sexual dysfunction in obese and overweight women. *International Journal of Impotence Research*. 2010 Jul-Aug; 22(4):220-6. doi: 10.1038/ijir.2010.7. PubMed PMID: 20485360.
 24. Slob AK, Koster J, Radder JK, Van der Werfften Bosch JJ. Sexuality and psychophysiological functioning in women with diabetes mellitus. *Journal of Sex & Marital Therapy*. 1990; 16:59-69. PubMed PMID: 2398502.
 25. Toorians AW, Janssen E, Laan E, Gooren LJ, Giltay EJ, Oe PL, Donker AJ, Everaerd W. Chronic renal failure and sexual functioning: clinical status versus objectively assessed sexual response. *Nephrology Dialysis Transplantation*. 1997 Dec; 12(12):2654-63. PubMed PMID: 9430867.
 26. Basok EK, Atsu N, Rifaioğlu MM, Kantarci G, Yildirim A, Tokuc R. Assessment of female sexual function and quality of life in predialysis, peritoneal dialysis, hemodialysis, and renal transplant patients. *International Urology and Nephrology*. 2009;41(3):473-81. doi: 10.1007/s11255-008-9475-z. PubMed PMID: 18853272.
 27. Salonia A, Zanni G, Briganti A, Deho F, Fabri F, Colombo R, et al. Sexual dysfunction is common with urinary tract system and urinary incontinence: results of a cross-sectional study. *European Urology*. 2004 May;45(5):642-8. PubMed PMID: 15082208.
 28. Serenko A, Morrison B, Suresky J. Urinary incontinence and sexual function in premenopausal women. *International Journal of Urological Nursing*. 2010; 4(2):80-86. DOI: 10.1111/j.1749-771X.2010.01098.x.
 29. Pauls RN. Impact of gynecological surgery on female sexual function. *International Journal of Impotence Research*. 2010 Mar-Apr;22(2):105-14. doi: 10.1038/ijir.2009.63. PubMed PMID: 20072131.
 30. Bancroft J, Loftus J, Long JS. Distress about sex: a national survey of women in heterosexual relationships. *Archives of Sexual Behavior*. 2003 Jun;32(3):193-208. PubMed PMID: 12807292.
 31. Hartmann U, Heiser K, Rüffer-Hesse C, Kloth G. Female sexual desire disorders: subtypes, classification, personality factors, a new direction for treatment. *World Journal of Urology*. 2002 Jun;20(2):79-88. PubMed PMID: 12107537.
 32. Clayton AH, Warnock JK, Kornstein SG, Pinkerton R, Sheldon-Keller A, McGarvey EL. A placebo-controlled trial of bupropion SR as an antidote for selective serotonin reuptake inhibitor-induced sexual

- dysfunction. *The Journal of Clinical Psychiatry*. 2004 Jan;65(1):62-7. PubMed PMID: 14744170.
33. Moreira ED, Brock G, Glasser EB, Nicolosi A, Laumann EO, Paik A, Wang T, Gingell C. Help-seeking behaviour for sexual problems: the Global Study of Sexual Attitudes and Behaviors. *International Journal of Clinical Practice*. 2005 Jan;59(1):6-16. PubMed PMID: 15707457.
34. Evangelina N, Kirana P-S, Chiu G, Link C, Rosen R, Hatzichristou D. Level of bother and treatment-seeking predictors among male and female in-patients with sexual problems: A hospital based study. *The Journal of Sexual Medicine*. 2010 Feb;7(2 Pt 1):700-11. doi: 10.1111/j.1743-6109.2009.01605.x. PubMed PMID: 19968770.
35. Prado DS, Mota VP, Lima TI. Prevalence of sexual dysfunction in two women groups of different socioeconomic status. *Revista Brasileira De Ginecologia E Obstetricia*. 2010 Mar;32(3):139-43. PubMed PMID: 20512261.