

Female Sexual Dysfunction and its Associated Risk Factors: An Epidemiological Study in the North-East of Iran

Reza Jafarzadeh Esfehiani (MD)¹, Nasrin Fazel (PhD)², Sareh Dashti (PhD)³, Sedigheh Moshkani (BSc)⁴, Faezeh Haghighi Hasanabad (MSc)⁵, Samira Foji (MSc)⁶, Batool Kamalimanesh (BSc)^{7*}

¹ Medical Student, Student Research Committee, Sabzevar University of Medical Sciences, Sabzevar, Iran

² PhD Candidate, Department of Nursing and Midwifery, School of Midwifery, Sabzevar University of Medical Sciences, Sabzevar, Iran

³ PhD Candidate, Department of Medicine and Health Sciences, School of Medicine, University Putra Malaysia, Serdang, Malaysia

⁴ BSc in Midwifery, Student Research Committee, Sabzevar University of Medical Sciences, Sabzevar, Iran

⁵ MSc in Medical and Molecular Microbiology, Cellular and Molecular Biology Research Center, School of Medicine, Sabzevar University of Medical Sciences, Sabzevar, Iran

⁶ MSc in Nursing, Department of Paramedic Science, School of Paramedic, Sabzevar University of Medical Sciences, Sabzevar, Iran

⁷ BSc in Midwifery, Student Research Committee, Sabzevar University of Medical Sciences, Sabzevar, Iran

ARTICLE INFO

Article type:
Original article

Article History:
Received: 20-Feb-2015
Accepted: 25-Oct-2015

Key words:
Desire
Orgasm
Sexual dysfunction
Women

ABSTRACT

Background & aim: Female sexual function (FSF) is a multifactorial phenomenon. Sexual function is influenced by different personal and environmental factors. This study aimed to evaluate FSF and its contributing factors using female sexual function index (FSFI).

Methods: This descriptive cross-sectional study was conducted on 264 women referring to 11 health centers of Sabzevar, Iran during October 2012 to January 2013 using a convenience sampling. Data were collected using a validated Persian version of FSFI containing six domains of sexual desire, lubrication, sexual arousal, sexual satisfaction, orgasm and sexual pain as well as demographic questionnaire. A total score of <28 was defined as sexual dysfunction, and higher scores were described as satisfactory sexual function. Data analysis was performed in SPSS V.20, using Chi-square, general linear model and binary logistic regression.

Results: The mean age of women enrolled in this study was 32.2±10.27 years. Considering the cut-off point of sexual dysfunction at 28, 62.1% of the study population had FSF. Highest rate of FSF was estimated at 49.2%. Age was associated with a significant decline in total scores of FSFI (P=0.042). Moreover, a significant correlation was observed between duration of marriage and total scores of FSFI (P<0.001).

Conclusion: According to the results, sexual desire was the most frequent contributing factor among FSF domains, and the majority of women ageing 21-26 years had at least one of the risk factors of FSF. In addition, our findings indicated that despite conventional beliefs, issues such as educational level has no significant effect on FSF in young women.

► Please cite this paper as:

Jafarzadeh Esfehiani R, Fazel N, Dashti S, Moshkani S, Haghighi Hasanabad F, Foji S, Kamalimanesh B. Female Sexual Dysfunction and its Associated Risk Factors: An Epidemiological Study in the North-East of Iran. Journal of Midwifery and Reproductive Health. 2016; 4(1): 498-505.

Introduction

Female sexual dysfunction (FSF) is a common multifactorial phenomenon in different populations. FSF encompasses four main phases of orgasmic disorders, sexual arousal disorders, sexual desire disorders and sexual pain disorders (1). In the United States, prevalence rate of FSF has been reported to be 43%, while

it has been estimated at 5.8% in the United Kingdom (2, 3). As such, it has been proclaimed that approximately 15% of the general population in the United Kingdom suffers from lifelong sexual dysfunction (3). In a study conducted in Iran in 2006, 31.5% of the general population were reported to have FSF (4).

* *Corresponding author:* Batool Kamalimanesh, Student Research Committee, Sabzevar University of Medical Sciences, Sabzevar, Iran. Email: b.kamalimanesh@gmail.com

Negligence or misdiagnosis of FSD could lead to critical conditions for individuals and their family members. Poor sexual health in some regions, especially those with specific cultural inclinations, may result in emotional rejection or divorce (5). According to statistics, as much as 40% of Iranian couples have extramarital affairs due to sexual dysfunction (6).

Laboratory findings on FSD are available in the literature; however, subjective data obtained from women with FSD has been shown to bear higher validity in the accurate diagnosis of FSD compared to laboratory measurements (7). The accepted gold standard for FSD diagnosis is the assessment of patients through interviews conducted by trained sexual therapists in accordance with the criteria of diagnostic and statistical manual of mental disorders (DSM-IV) (8).

One of the alternative methods for FSD assessment is based on questionnaires. Various questionnaires are available for evaluation of FSD. For instance, female sexual function index (FSFI) is one of the most credible questionnaires in this regard, which has been shown to have acceptable internal consistency (Cronbach's alpha: 0.89-0.98 for total score and scores in each domain). In addition, FSFI has adequate discrimination properties in all its domains. This questionnaire has been validated for the Iranian population, and normative data for this population is available as well (9, 10).

Few studies have evaluated the rate of FSD in healthy, adult women in Iran and they were mostly conducted in Tehran city (4, 11). Given the substantial effect of FSD on familial and personal relations, as well as the scarcity of regional data on this disorder in the North-eastern part of Iran, this study aimed to determine the prevalence of FSD and its risk factors in Sabzevar city, Iran.

Materials and Methods

Study subjects

This cross-sectional study was conducted on 264 women referring to 11 health centers in Sabzevar, Iran during October 2012-January 2013. Health centers were selected based on their geographical location from the north, center and south regions of the city. Married women with sexually active partners who

agreed to participate were enrolled in the study, and written informed consent was obtained from all the subjects who met the inclusion criteria. Exclusion criteria of this study were as follows: 1) pregnancy; 2) history of sexual dysfunction; 3) breastfeeding and 4) drug addiction or alcoholism. Subjects completed FSFI and demographic questionnaires.

Data collection

FSFI questionnaire consists of 19 items to evaluate female sexual function within a period of four weeks. In this questionnaire, six main domains of sexual function are evaluated, including sexual desire, lubrication, sexual arousal, sexual satisfaction, orgasm and sexual pain (7, 12). Questions are scored based on a Likert scale, and total score of FSFI is obtained by summing up the scores achieved in each domain.

In the present study, cut-off points for FSD were as follows: sexual desire: 3.3, sexual arousal: 3.4, lubrication: 3.7, sexual pain: 3.8, orgasm: 3.4 and sexual satisfaction: 3.8 (9). FSFI has been widely used in clinical and non-clinical settings, and the Persian version of this questionnaire has been validated for the Iranian population (13). Reliability of FSFI was assessed for the entire questionnaire, as well as the items in each domain, using Cronbach's alpha. Cronbach's alpha was calculated to be ≤ 0.70 , which was indicative of adequate reliability coefficient. Moreover, sensitivity analysis for the Iranian version of FSFI determined score 28 as the cut-off point (sensitivity: 83%, specificity: 82%). In other words, total score of < 28 was defined as sexual dysfunction, and higher scores were described as satisfactory sexual function (9).

Demographic questionnaires were used to collect the following data: age, number of children, duration of relationship with partner, age of partner, menstrual pattern, method of contraception, education level of subject and partner, employment status of partner, presence of diseases, consanguinity with partner, use of medications, family income status and history of sexual abuse.

If participants were not able to read or write, they would be assisted by the researcher to understand and complete the questionnaires

via interviews. Women diagnosed with sexual dysfunction at the end of the study were advised to consult a gynecologist.

This study was approved by the Ethics Committee of Sabzevar University of Medical Sciences, Iran.

Statistical analysis

In this study, data analysis was performed using SPSS V.20 (IBM Inc., Chicago, IL, USA). Study variables including age, income status, employment status and education status were presented as frequency and percentage. Normally distributed data were presented as mean and standard deviation (SD), while median and interquartile range (IQR) were used for data without normal distribution.

Chi-square test was used to evaluate the association between study variables and prevalence of FSD. In addition, general linear model (GLM) was applied to assess the effect of study variables on the total score of FSFI. Also, binary logistic regression was used to evaluate the relationship between total FSFI score and other study parameters.

Initially, univariate analysis was performed to verify the association between study variables and presence of FSFI, and variables with significant correlations were used in multiple regression analysis. Moreover, odds ratio with 95% confidence interval was used to describe the relationship between study parameters. It is noteworthy that subjects with history of sexual abuse were excluded from GLM and regression analysis in order to reduce bias. Confidence limit of this study was set at 0.95, and P-value of less than 0.05 was considered as statistically significant.

Results

In total, 264 women with mean age of 32.2 ± 10.27 years were enrolled in this study (age range: 15-62 years). Natural birth control was the most common method of contraception among these women (31.1%), and 32.2% of the subjects had no children. The majority of participants had regular menstrual cycle (64%), and 7.6% were in menopause. In addition, 6.8% and 2.3% of the studied subjects were undergoing hormone therapy and psycho-therapy, respectively. As for diseases, diabetes mellitus was reported in 2.3% of the subjects, while 3.4% had ovarian cysts, 2.7% had hypertension, and 0.8% of the women were infertile.

Consanguinity was reported in 78 couples (29.5%). With respect to age, only one woman was the same age as her partner, and 96 couples had age difference of less than two years. In terms of education level, more than one third of the participants (34.1%) were below diploma, and 97 women (36.7%) reported the education level of their partners to be below diploma. It is noteworthy that 3% of the study population had history of sexual abuse.

Among the studied subjects, prevalence of sexual dysfunction was estimated at 62.1% ($n=164$). Sexual dysfunction was observed to be most frequent in domains of sexual desire (49.2%), sexual arousal (43.2%), orgasm (38.6%), lubrication (36%), sexual pain (35.2%) and sexual satisfaction (26.1%), respectively (Figure 1).

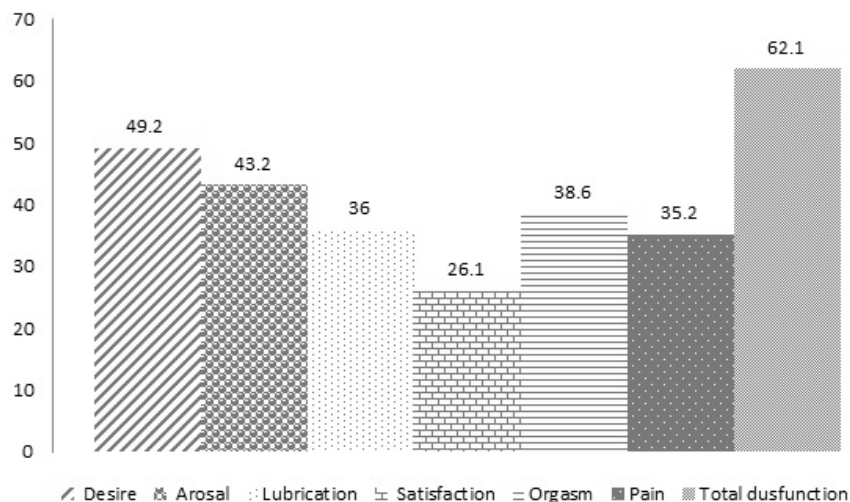


Figure 1. Frequency of Sexual Dysfunction Domains among Subjects

Compared to women with normal sexual function, subjects with FSD were significantly older ($P<0.001$) and had lower education level ($P<0.001$). Moreover, rate of consanguinity was higher among women with FSD ($P=0.005$), and partners of these women were reported to have lower education level ($P<0.001$). Also, use of medications was more prevalent among women with FSD compared to subjects with normal sexual function ($P=0.01$) (Table 1).

According to other results of this study, number of children was significantly higher in women with FSD (median=2.0, IQR=2.0) compared to those with normal sexual function (median=1.0, IQR=2.0) ($P<0.001$). Additionally, women with FSD had longer marriages (median=3.0 years, IQR=3.0) compared to normal women (median=2.0 years, IQR=1.0) ($P<0.001$). Distribution of sexual dysfunction in different domains of FSFI is shown in Table 2.

According to the results of GLM analysis, factors such as employment status of spouse ($P=0.03$), use of medications ($P=0.01$) and

education level of women ($P=0.01$) had significant effects on FSFI scores. As such, employment status of the spouse and low education level of women significantly reduced total FSFI scores.

Finally, univariate analysis revealed a significant correlation between FSD and variables such as age, personal and spousal education level, number of children, duration of marriage, consanguinity and use of medications. In addition, multiple regression analysis was indicative of a significant correlation between the education level of women and prevalence of FSD ($P=0.01$) (Table 3).

Discussion

Sexual function was first described in 1960 as a linear model consisting of four phases of excitement, plateau, orgasm and resolution. Later in 2002, non-linear model of sexual response was defined, especially for female gender, encompassing social and psychological aspects (1).

Table 1. Distribution of Study Variables between Women with Female Sexual Dysfunction (FSD) and Normal Subjects

		FSD (N=164)	Normal (N=100)	P-value
Age	15-26 Years	47 (28.7%)	55 (55.0%)	<0.001*
	27-38 Years	60 (36.6%)	33 (33.0%)	
	>39 Years	57 (34.8%)	12 (12.0%)	
Consanguinity		58 (35.4%)	20 (20.0%)	0.005*
Medication Use		79 (48.2%)	33 (33.0%)	0.01*

Education Level of Women	Diploma/Below Diploma	125 (76.2%)	40 (40.0%)	<0.001*
	College and Above	39 (23.8%)	60 (60.0%)	
Education Level of Spouse	Diploma/Below Diploma	115 (70.1%)	48 (48.0%)	<0.001*
	College and above	49 (29.9%)	52 (52.0%)	
Employment Status of Spouse	Unemployed	65 (39.6%)	49 (49.0%)	0.14
	Employed	99 (60.4%)	51 (51.0%)	
Age Difference of Couple	<2 Years	55 (33.5%)	41 (41.0%)	0.22
	>3 Years	109 (66.5%)	59 (59.0%)	

*Significant at $\alpha=0.05$

Table 2. Mean Scores of FSD Domains

	Sexual Desire	Lubrication	Arousal	Sexual Satisfaction	Orgasm	Sexual Pain	FSFI*Score
Mean	3.25	4.06	3.47	4.40	3.6318	4.11	23.00
Standard Deviation	1.55	2.06	1.86	1.78	2.06699	2.00	9.84

*FSFI: Female Sexual Function Index

Table 3. Results of Logistic Regression for Correlations between Total FSFI Scores and Study Variables

Study Variables	Univariate Analysis				Multiple Regression Analysis				
	P-value	OR	95% CI** for OR***		P-value	OR	95% CI for OR		
			Lower	Upper			Lower	Upper	
Age ¹	27-38 Years	0.01*	2.11	1.18	3.77	0.87	1.13	0.25	5.21
	>39 Years	<0.001*	5.30	2.53	11.12	0.60	1.38	0.41	4.59
Low Education Level (women)	<0.001*	0.23	0.13	0.39	0.01*	2.85	1.34	6.08	
Low Education Level (spouse)	0.001*	0.40	0.24	0.68	0.86	1.08	0.47	2.48	
Employment Status of Spouse	0.13	1.49	0.89	2.47	0.98	0.99	0.46	2.17	
Age Difference of Couple (>3 Years)	0.22	1.39	0.82	2.33	-	-	-	-	
Number of Children	<0.001*	1.64	1.34	2.01	0.72	1.07	0.74	1.53	
Duration of Marriage	<0.001*	1.55	1.31	1.84	0.17	1.31	0.89	1.94	
Consanguinity	0.01*	2.20	1.22	3.97	0.29	0.72	0.39	1.32	
Medication Use	0.03*	0.56	0.33	0.95	0.29	0.72	0.39	1.32	

¹Age group of 15-26 was set as reference

*Significant at $\alpha=0.05$, **CI: Confidence Interval, ***OR: Odds Ratio

Sexual health is a complicated term covering a wide range of health aspects. According to the report published by the World Health Organization (WHO) in 2006, sexual health defines not only as the absence of sexually transmitted diseases, but is also related to mental, physical and emotional well-being of an individual. Any malfunction in the aforementioned aspects could lead to sexual dysfunction. Therefore, a respectful approach free of discrimination is needed as to maintain sexual health in a community (14).

According to the results of the present study, FSD has a relatively high prevalence among

Iranian women (62.1%). In a large-scale study, highest rate of sexual function problems in all categories was reported in regions of South-east Asia. As such, low sex drive and inability to reach orgasm were the most prevalent domains of sexual dysfunction in these areas (15). In another population-based study in Iran, FSD status was evaluated in three levels of mild (total FSFI score: 18-23), moderate (total FSFI score: 11-17) and severe (total FSFI score: ≤ 10). According to the findings, 24.9% of the population had moderate or severe sexual dysfunction. Furthermore, 31.5% of the studied women were reported to have disorders in at

least one of the domains of FSD (4).

In one study conducted in Turkey, rate of FSD was reported to be 43.4% (total FSFI score: <26) (16). Considering total FSFI score of <28 as the presence of FSD, approximately 62% of the study population in Turkey had FSD, which is significantly higher than the rate reported by similar studies. Variations in the reported prevalence rates of FSD could be due to the differences in defining cut-off points for FSFI scores in related studies. In the current study, cut-off point for FSD was determined with 83% sensitivity and 82% specificity (9).

In the present study, sexual desire was the most frequent domain of FSD (49.2%). This finding is inconsistent with the results obtained by a similar study in Iran, which reported orgasmic disorders as the most prevalent domain (37%), and sexual desire as the second

most common problem among women with FSD (35%). This difference could be due to variations in cut-off points determined for FSD domains. In the current study, we used different cut-off points for each domain, while previous studies determined the cut-off point at 3.9 for all domains, which is higher than the value considered in the present study (4).

In the current study, rate of FSD was observed to increase with age (Figure 2). Common belief suggests that sexual disorders tend to be more prevalent in middle-aged women, as well as those ageing ≥ 27 years (4, 16-18). Increased prevalence of FSD is mainly associated with age due to decreased sex drive, reduced sexual intercourse and vaginal dryness caused by menopause (i.e., low estrogen secretion) (19).

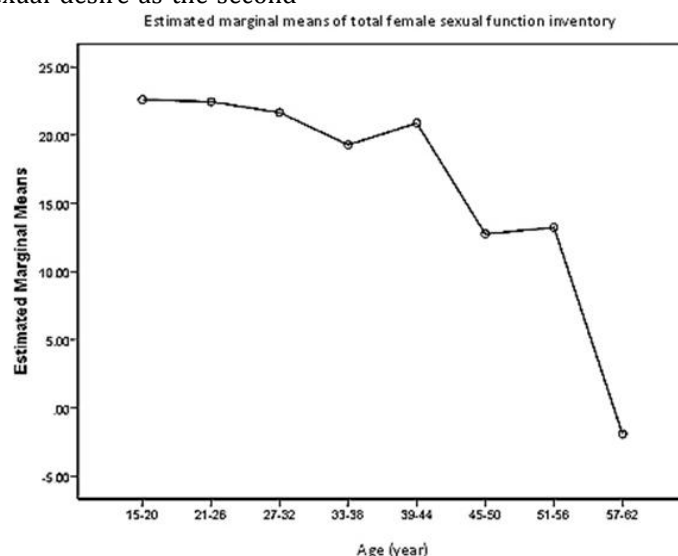


Figure 2. Total Female Sexual Function Index (FSFI) Scores in Different Age Groups

In the present study, a significant correlation was observed between duration of relationship with partner and prevalence of FSD. Another research performed in the same region as the current study indicated that the rate of sexual problems decreased significantly with longer duration of relationship between partners (20). These inconsistencies between the findings could be due to the use of different questionnaires. While previous studies used researcher-designed questionnaires, we used the validated Persian translation of FSFI scale. Furthermore, multiple logistic regression

indicated that FSD had no correlations with the education level of spouse, which is in line with the findings of a similar study conducted in Iran (21).

Results of the present study revealed that low education level has a significant effect on the manifestations of FSD, and this finding was confirmed by another study in this regard, which identified low education level as a predictor for sexual complaints (22).

There is controversy regarding the effect of menopause on FSD. While some studies have reported that menopause has no impact on

sexual dysfunction, other researchers believe that menopause could adversely affect FSD (3, 17). For instance, one study performed on the Iranian population found a significant correlation between FSD, menopause and education level of spouse (23). According to their results, menopausal symptoms, such as sleep disturbance and depression, could lead to decreased sex drive in women regardless of hormonal changes associated with menopause (24, 25). Due to this controversy, our subjects were not assessed separately from menopausal women.

Study limitations

In the present study, we evaluated women with psychological problems and diabetes, as well as those undergoing hormonal therapy and receiving anti-hypertensive drugs. Including such patients in our analysis could have affected the obtained results. However, it should be noted that the main objective of this study was evaluation of FSD in a random sample of women; therefore, this issue seems justifiable. In addition, male factors involved in the prevalence of FSD were not fully assessed due to cultural restrictions. Researchers had no access to all male partners, and our participants were not allowed to take questionnaire out of the study setting. Furthermore, most women refused to involve their husbands in the study.

Another limitation of the current study was exclusion of cases with missing data from multivariate logistic regression, which resulted in some inconsistencies between the results of univariate and multivariate logistic regression.

Conclusion

According to the results of the present study, sexual desire is the most significant contributing factor to FSD. The majority of our participants aged ≥ 27 years and had at least one of the risk factors of FSD. In conclusion, high prevalence of sexual disorders among women should be alarming for health care providers in Iran. Since sexual dysfunction could pose a serious threat to marriage and familial relations, and education seems to have insignificant effect on FSD, it is recommended that special clinics be established for the improvement of sexual issues in our country.

Conflicts of Interest

The authors declare no conflicts of interest.

References

1. Kammerer-Doak D, Rogers RG. Female sexual function and dysfunction. *Obstetrics and Gynecology Clinics of North America*. 2008; 35(2):169-183.
2. Burri A, Spector T. Recent and lifelong sexual dysfunction in a female UK population sample: prevalence and risk factors. *The Journal of Sexual Medicine*. 2011; 8(9):2420-2430.
3. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: prevalence and predictors. *JAMA*. 1999; 281(6):537-544.
4. Safarinejad MR. Female sexual dysfunction in a population-based study in Iran: prevalence and associated risk factors. *International Journal of Impotence Research*. 2006; 18(4):382-395.
5. Fajewonyomi BA, Orji EO, Adeyemo AO. Sexual dysfunction among female patients of reproductive age in a hospital setting in Nigeria. *Journal of Health, Population, and Nutrition*. 2007; 25(1):101-106.
6. Kariman NS, Tarverdi M, Azar M, Alavi Majd HA. Evaluating the effects of colporrhaphy on the sexual satisfaction of women. *Journal of Reproduction & Infertility*. 2005; 6(3):254-260.
7. Wiegel M, Meston C, Rosen R. The female sexual function index (FSFI): cross-validation and development of clinical cutoff scores. *Journal of Sex & Marital Therapy*. 2005; 31(1):1-20.
8. Basson R, Berman J, Burnett A, Derogatis L, Ferguson D, Fourcroy J, et al. Report of the international consensus development conference on female sexual dysfunction: definitions and classifications. *The Journal of Urology*. 2000; 163(3):888-893.
9. Mohammadi K, Rahnama P, Mohseni SM, Sahraian MA, Montazeri A. Determinants of sexual dysfunction in women with multiple sclerosis. *BMC Neurology*. 2013; 13(1):83-89.
10. Chedraui P, Perez-Lopez F, San Miguel G, Avila C. Assessment of sexuality among middle-aged women using the Female Sexual Function Index. *Climacteric: The Journal of The International Menopause Society*. 2009; 12(3):213-221.
11. Shokrollahi P, Mirmohamadi M, Mehrabi F, Babaei G. Prevalence of sexual dysfunction in women seeking services at family planning centers in Tehran. *Journal of Sex & Marital Therapy*. 1999; 25(3):211-215.
12. Meston CM. Validation of the Female Sexual Function Index (FSFI) in women with female orgasmic disorder and in women with hypoactive

- sexual desire disorder. *Journal of Sex & Marital Therapy*. 2003; 29(1):39-46.
13. Gerstenberger EP, Rosen RC, Brewer JV, Meston CM, Brotto LA, Wiegel M, et al. Sexual desire and the Female Sexual Function Index (FSFI): A sexual desire cutpoint for clinical interpretation of the FSFI in women with and without hypoactive sexual desire disorder. *The Journal of Sexual Medicine*. 2010; 7(9):3096-3103.
 14. World Health Organization. Defining sexual health: report of a technical consultation on sexual health, 28-31 January 2002. Geneva: World Health Organization; 2006.
 15. Laumann EO, Nicolosi A, Glasser DB, Paik A, Gingell C, Moreira E, et al. Sexual problems among women and men aged 40-80 y: prevalence and correlates identified in the Global Study of Sexual Attitudes and Behaviors. *International Journal of Impotence Research*. 2005; 17(1):39-57.
 16. Aslan E, Beji NK, Gungor I, Kadioglu A, Dikencik BK. Prevalence and risk factors for low sexual function in women: a study of 1,009 women in an outpatient clinic of a university hospital in Istanbul. *The Journal of Sexual Medicine*. 2008; 5(9):2044-2052.
 17. Shifren JL, Monz BU, Russo PA, Segreti A, Johannes CB. Sexual problems and distress in United States women: prevalence and correlates. *Obstetrics & Gynecology*. 2008; 112(5):970-978.
 18. Ibrahim ZM, Ahmed MR, Sayed Ahmed WA. Prevalence and risk factors for female sexual dysfunction among Egyptian women. *Archives of Gynecology and Obstetrics*. 2013; 287(6):1173-1180.
 19. Castelo-Branco C, Cancelo MJ, Chedraui P. Female sexual dysfunction in postmenopausal women. *Expert Opinion on The Therapeutic Patents*. 2007; 17(6):639-647.
 20. Bolourian Z, Ganjloo J. Evaluating sexual dysfunction and some related factors in women attending Sabzevar Health Care Centers. *Journal of Reproduction & Infertility*. 2007; 20(31):163-170.
 21. Mazinani R, Akbari Mehr M, Kaskian A, Kashanian M. Evaluation of prevalence of sexual dysfunctions and its related factors in women. *Razi Journal of Medical Sciences*. 2013; 19(105):59-66.
 22. Echeverry MC, Arango A, Castro B, Raigosa G. Study of the prevalence of female sexual dysfunction in sexually active women 18 to 40 years of age in Medellín, Colombia. *The Journal of Sexual Medicine*. 2010; 7(8):2663-2669.
 23. Fahami F, Hassanzahraei R, Beigi M, Arman S. The relation of socioeconomic factors and sexual dysfunctions in menopausal women. *Iranian Journal of Nursing and Midwifery Research*. 2010; 10(2):61-64.
 24. Reed SD, Newton KM, LaCroix AZ, Grothaus LC, Ehrlich K. Night sweats, sleep disturbance, and depression associated with diminished libido in late menopausal transition and early postmenopause: baseline data from the Herbal Alternatives for Menopause Trial (HALT). *American Journal of Obstetrics and Gynecology*. 2007; 196(6):593.e1-e7.
 25. Golmakani N, SharifiSistani N, Taghi Shakeri M, Hasanzade Mofrad M, Sajadi Tabassi A. Comparing two treatment methods of vitamin E suppository and conjugated estrogen vaginal cream on the quality of life in menopausal women with vaginal atrophy. *Journal of Midwifery and Reproduction Health*. 2014; 2(4):253-261.