



Prevalence of Sexual Dysfunction in Healthy Women and its Predictors: A Cross-Sectional Study

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Abstract

Background: Sexuality is an important and inseparable part of the life of every woman. Female sexual dysfunction (FSD) has a major influence on quality of life and can lead to personal distress and anxiety. This study aimed to determine the prevalence of sexual dysfunction and predisposing factors in women.

Methods: This cross-sectional study was carried out on 400 outpatient women aged 15-49, who had a health record in the health care centers of Rasht, Iran during 2015-2016. Samples were selected through multi-stage cluster sampling method. Data collection tool included demographics and reproductive information, the standard questionnaire of female sexual function index (FSFI). Multivariate linear regression analysis was used to determine the predictors of sexual dysfunction in SPSS 13.

Results: The mean±SD score of total FSFI was 28.14±3.82, ranging from 2 to 36. The frequency of sexual dysfunction was 34.3% in total. Multivariate linear regression analysis showed a significant correlation between FSFI and some factors including age, education level, age at menarche, frequency of sex, and knowledge on sexual function. These factors accounted for 12% of the variance in the sexual function index of women.

Conclusions: Considering the critical impact of sexual function on the health of couples, paying attention to sexual function in women and its predictors are important to help and plan prevention programs.

Introduction

Sexuality is an important and inseparable part of the life of every woman (1). Female sexual dysfunction (FSD) has a significant impact on quality of life and can lead to personal distress, anxiety and interpersonal difficulty (1-3).

According to the World Health Organization (WHO), and International Classifications of Diseases-10 (ICD-10), FSD is defined as “a syndrome that includes the various ways in which adult people may have difficulty in experiencing personal satisfaction in non-compulsory sexual activities. Sexual response is a complex interaction between psychological, interpersonal, social, cultural and physiological factors; so that disturbance in one or more of these factors may affect any stage of the sexual response. In order to diagnose sexual dysfunction, it must: 1) occur frequently, although it may be absent on some occasions; 2) be present for at least several months; and 3) be associated with clinically significant distress. “(4). FSD is included disorders of desire/libido, arousal, pain, and inhibited orgasm (5).

FSD is affected by several psychological, biological and sociocultural factors (6). The result of a review study showed that the low sexual desire was the most prevalent dysfunction among both premenopausal and postmenopausal women. Low sexual desire regularly enhances with increasing age. The overall frequency of reported low sexual desire ranged from 10% to 64% in different studies (7).

Sexual dysfunction is considered as a widespread problem in Iranian women. One study showed that the prevalence of sexual dysfunction is 31.5% in Iran. This study showed that some factors, such as lower marriage age, financial dependency, lower educational level, lower physical activity and multi-parity increase prevalence of sexual dysfunction. The prevalence of FSD may vary due to cultural, racial and health variables among the countries (2). Therefore, an assessment is needed for any plan to promote healthy behaviors of a society (8). Investigating the rate of sexual dysfunction and factors influencing for these conditions are very important to help to do risk assessment and plan treatment and prevention programs in sexual medicine (9). Epidemiology can be defined as a population survey in the development of disease and health, with the ultimate goal of preserving and preventing it (7). Understanding the prevalence and risk factors of sexual dysfunction is important for prevention efforts (6, 9). According to the authors' search, no study was found on the prevalence of sexual dysfunction and its risk factors in women in Rasht. Therefore, we aimed to determine the prevalence of sexual dysfunction in women referred to health centers in Rasht - Iran and its predictors.

Methods

This cross-sectional study was carried out on 400 outpatient women aged 15-49, who were referred to a visit at health care centers of Rasht-Iran, 2016. The inclusion criteria were: referring to the health centers in Rasht and having health care records, willingness to participate in the research, being married, lack of speech and hearing problems and no mental illnesses or chronic diseases according to patient's report and information in the health care records.

The study was approved by the Ethics Committee at Guilan University of Medical Sciences (code: IR.GUMS.REC.1394.120).

Sample size was calculated 357 women based on the main variable of sexual dysfunction according to the results of a study by Jaafarpour et al. (10), considering mean = 23.89, $d= 0.05$, $SD= 9.2$, design effect=1.5 and a significant level of 95%. Finally, with the probable dropout rate of 10%, 400 persons were estimated for this study.

Data collection tool included 2 parts; demographics and reproductive information, the standard questionnaire of female sexual function index (FSFI). FSFI multidimensional self-report instrument was developed by Rosen et al., in 2000 for the assessment of female sexual function (5). The reliability of the questionnaire of female sexual function index has been approved by Mohammadi et al., in Iran (11). Cronbach's alpha for the total sexual function index was calculated as 0.92, and it ranged from 0.70 (sexual desire) to 0.91 (orgasm) for its dimensions. The FSFI is a questionnaire consists of 19 items investigating the subjects in 6 domains of desire, arousal, lubrication, orgasm, pain, and satisfaction. Higher score reflects better sexual function (12).

The FSFI total score is calculated by the summing of the scores of six sub-scales. The total sexual function score ranges from 2 to 36 with the score less than 28 as cut-off for sexual dysfunction in Iran. The sexual desire score ranges from 1.2 to 6, satisfaction score ranges from 0.8 to 6 and the rest of the sub-scales (lubrication, orgasm, sexual arousal and pain) ranges from 0 to 6. Cut off for different domains defined as: desire 3.3, arousal 3.4, lubrication 3.4, orgasm 3.4, satisfaction 3.8 and pain 3.8. Scores less than cutoff are considered as dysfunction for each domain (11, 13).

Knowledge score on sexual infections was determined by the questionnaire of knowledge regarding STIs which have 37 three-choice items including true (score=1), false and I don't know (score=0). The scores ranged between zero and 100. The questionnaire prepared by Farshbaf-Khalili and et al. in 2014 and its validity was determined that the amount of content validity index (CVI) and content validity ratio (CVR) was obtained 0.72 and 0.81, respectively. The reliability of the questionnaire was determined through intra-class correlation coefficient (ICC) with 95% confidence interval that was calculated 0.98 (0.99-1.0) (14).

At first, a list of all the health care centers in Rasht was provided. Then, sampling was conducted in two stages by using multi-stage cluster sampling. Firstly, 10 centers randomly were selected among the 59 health care centers. In the next stage, according to the total sample size, the proper numbers of women proportionate to population in reproductive age covered by each center (31-48 women) were randomly selected, and their phone number and general information were recorded through their health records. After a phone call to the women and explaining about the study, the researcher surveyed the eligibility criteria and if they met the criteria, they were invited and asked to fill a questionnaire on a specified day in a suitable room at health care centers. Sampling in both stages was conducted randomly via the website www.randomizer.org. Before data collection, informed consent form was signed by participants after explaining about the study.

We used the SPSS ver. 13 for data analysis. The normal distribution of continuous data was investigated using kolmogorov-smirnov which was normal except for satisfaction domain of FSFI. Descriptive statistics including frequency and percentage as well as mean, median, standard deviation and Q25, Q75 were used to describe the social-demographic characteristics, knowledge of sexual function and the status of sexual function. Bivariate statistical tests such as chi-square, independent-t and one-way ANOVA, pearson and spearman correlation, Mann-Withney, and Kruskal-Wallis tests were used to analyze the relationship between sexual function and socio-demographic characteristics and knowledge. Afterward, the independent variables with $p < 0.2$ in the bivariate tests were entered into the multi-variate linear regression model through backward strategy, adjusted for the confounding factors and measure the respective effects of the independent variables (knowledge, socio-demographic characteristics) on the sexual function.

Results

The mean (SD) age of women and their husbands were 30.6 (5.8) and 34.6 (6.6), respectively. The mean (SD) age at marriage in women was 21.60 (4.03). The mean (SD) family size was 3.51 (0.74). Nearly half of women (50.0%) and their husbands (50.65%) had diploma. Majority of women (90.41%) were housekeeper versus majority of husbands (61.07%) occupied in private sector (Table 1).

Table 1. Socio-demographic characteristic of participants and their relation with total score of sexual function (n=400)

Variable	N (%)	Sexual function Mean (SD)	Statistical indicators
Age	30.60 (5.83) *	28.14 (3.82)	^a P<0.001 r=-0.230
Husband's age	34.64 (6.64) *	28.14 (3.82)	^a p=0.001 r=-0.159
Marriage age	21.60 (4.03) *	28.14 (3.82)	^a p=0.063 r=-0.209
Number of family	3.51 (0.74) *	28.14 (3.82)	^a p=0.049 r=-0/99
Education			
Illiterate	2 (0.51)	32.30 (0.00)	^b P=0.001 F=5.085 df=4
Primary school	19 (4.82)	27.04 (4.08)	
Secondary school	48 (12.18)	28.95 (2.55)	
High school & Diploma	197 (50.0)	27.00 (3.00)	
Academic	128 (32.49)	29.02 (3.00)	
Occupation			
housekeeper	358 (90.41)	28.55 (3.92)	^b p=0.464 F=0.857df=3
employee	26 (6.56)	29.26 (2.62)	
privacy sector	12 (3.03)	28.02 (2.43)	
Income (1000 Rial)			
<2000	8 (2.03)	27.71 (4.66)	^b p=0.886 F=0.343 df=5
2000-4000	12 (3.05)	27.76 (3.29)	
4000-8000	21 (5.33)	28.97 (1.78)	
8000-16000	91 (23.09)	28.04 (3.92)	
>16000	262 (66.50)	28.14 (3.92)	
Husband's education			
Illiterate	2 (0.51)	32.30 (0.00)	^b P=0.457 F=0.953 df=6
Primary school	23 (5.82)	27.67 (3.27)	
Secondary school	44 (11.14)	27.89 (3.39)	
High school & Diploma	204 (50.65)	27.86 (3.88)	
Associate degree	38 (9.62)	28.38 (3.89)	
Bachelor of science	84 (21.26)	28.72 (3.83)	
Husband's occupation			
Unemployed	3 (0.76)	28.50 (2.59)	^b P=0.487 F=0.862 df=4
Employee	97 (24.68)	28.55 (3.58)	
Worker	53 (13.49)	27.91 (3.63)	
private sector	240 (61.07)	28.04 (3.96)	

The variables marked as * were reported as mean (SD). The others were reported as n (%).

a. Pearson

b. One-way ANOVA

Almost one third of women (36%) stated that they use condoms in their sexual relations. Seventy seven (19%) of the subjects had oral sex as well as 47 women (11%) declared having anal sex. One hundred sixteen women (29%) had used a condom in their last sexual relationship; the suggestion of condom use in 56% of cases was made by women and in 44% of cases, it was done by their spouses (Table 2).

Table 2. Obstetric characteristic of participants & some effective factors and their relation with the total score of sexual function (n=400)

Variable	N (%)	Sexual function Mean (SD)	Statistical indicators
Parity			bP=0.016 F=3.070df=4
0	7 (1.78)	29.16 (2.36)	
1	229 (58.12)	28.57 (3.84)	
2	124 (31.47)	27.29 (3.87)	
3 and more	34 (8.63)	28.10 (3.35)	
Unwanted pregnancy			cP=0.069 t=3.316 df=1
Yes	154 (39.09)	27.70 (3.88)	
No	240 (60.91)	28.42 (3.75)	
Use of contraception			cP=0.628 t=0.465 df=2
Yes	374 (95.41)	28.17 (3.81)	
No	18 (4.59)	27.33 (4.06)	
Contraception method			bP=0.430 F=1.007df=8
Withdrawal	165 (44.11)	28.36 (3.66)	
Hormonal method	52 (13.91)	27.69 (4.21)	
Condom	95 (25.40)	28.23 (4.16)	
IUD*	9 (2.41)	26.39 (3.71)	
TL*	29 (7.75)	26.75 (2.94)	
Withdrawal & Condom	24 (6.42)	28.91 (4.21)	
Age at menarche*	13.18 (1.33)	28.14 (3.82)	ap=0.009 r=-0.131
Knowledge score on* sexual infections (0-100)	76.85 (12.73)	28.14 (3.82)	aP=0.003 r=0.149
Frequency of sex			bP<0.001 F=5.696 df=4
Never	5 (1.28)	27.78 (2.17)	
Less than once/month	18 (4.63)	25.54 (3.77)	
1-2/week	316 (81.24)	27.97 (3.86)	
3 or more/week	50 (12.85)	29.94 (3.02)	
Use of condom			cP=0.341 t=1.153 df=2
Yes	144 (36.92)	27.88 (4.33)	
No	246 (63.08)	28.28 (3.51)	
Anal intercourse			cP=0.519 t=-0.646df=391
Yes	47 (11.93)	27.80 (3.56)	
No	347 (88.07)	28.18 (3.86)	

*These variables were reported as mean (SD). IUD: Intra Uterine Device. TL: Tubal Ligation

a. Pearson

b. One-way ANOVA

c. Independent t-test

The mean (SD) score of total sexual function among subjects was 28.14 (3.82). The mean (SD) score of sub-scales (domains) of desire, arousal, lubrication, orgasm and pain were 3.75 (1.09), 4.26 (0.85), 4.92

(0.94), 4.75 (0.86), 4.95 (1.16), respectively. The median (Q25, Q75) sub-scale of satisfaction was 6 (5.2, 6.0). The prevalence of sexual dysfunction among participants was 34.3%. The frequency of sub-scales disorders was as below: desire disorders by 27.7%, arousal by 13.9%, lubrication by 7.1%, orgasmic disorders by 7.8%, satisfaction by 3.5%, and pain disorders by 19% (Table 3).

Table 3. Mean (SD) score of sexual function and its dimensions, and frequency of sexual dysfunction among studied women.

Components	Mean (SD)	Median (Q25, Q75)	Sexual dysfunction
Total score (2-36)	28.14 (3.82)	28.90 (26.50, 30.70)	34.3%
Sexual desire (1.2-6)	3.75 (1.09)	4.20 (3.0, 4.20)	27.7%
Sexual arousal (0-6)	4.26 (0.85)	4.20 (3.90, 4.80)	13.9%
Lubrication (0-6)	4.92 (0.94)	5.10 (4.27, 5.70)	7.1%
Orgasm (0-6)	4.75 (0.86)	4.80 (4.40, 5.60)	7.8%
Satisfaction (0.8-6)	5.49 (0.80)	6 (5.20, 6.0)	3.5%
Pain (0-6)	4.95 (1.16)	5.20 (4.0, 6.0)	19%

The mean (SD) score of knowledge on sexual infections was 76.85 (12.73). A significant relationship was seen between the mean score of total sexual function with age, education level, husband's age, parity, age at menarche, number of sex and mean score of knowledge on sexual infections ($p < 0.05$). (Table 1, 2) Variables of age, education level, husband's age, parity, age at menarche, frequency of sex and mean score of knowledge on sexual infections, age of marriage, unwanted pregnancy had $p < 0.2$ in the bivariate analysis, were entered in the backward multivariate linear regression. A significant relationship was observed between age, education level, age at menarche, number of sex and knowledge on sexual infections with sexual function. Taken together, they could predict 12% of the variance of sexual function in women (Table 4).

Table 4. Personal and Socio-demographic predictors of sexual function in subjects (n=400)

Variable	B (%95 CI)	p
Age	-0.11 (-0.18 to -0.05)	0.001
Education		
Illiterate	2.73 (-2.44 to 7.89)	0.300
Primary school	-1.38 (-3.16 to 0.41)	0.130
Secondary school	-0.06 (-1.38 to 1.26)	0.93
High school	-1.15 (-1.88 to -0.42)	0.002
Academic	reference	reference
Age at menarche	-0.26 (-0.54 to 0.02)	0.071
Number of sex		
Never	-1.88 (-5.25 to 1.49)	0.274
Less than once/month	-2.68 (-4.73 to -0.63)	0.010
1-2/week	-1.16 (-2.22 to -0.09)	0.032
3 or more/week	reference	reference
Knowledge on sexual infections	0.05 (0.02 to 0.08)	0.02

Discussion

This study aimed to determine the prevalence of sexual dysfunction and predisposing factors in women the results showed that the mean (SD) score of total sexual function among subjects was 28.14 (3.82) that with regard to cut-off point for sexual function index, it was in a borderline level. This result is very alarming for families and health authorities, because various studies have revealed a significant positive correlation between the sexual function and quality of life and interpersonal relationships (15, 16). Also sexual dysfunctions can severely lead to disrupted woman's self-esteem (2). Therefore, despite the necessity of sex education in Iran, we could not reach a conclusion about the whole country from the data we obtained here.

To date, a few large-scale studies have evaluated the prevalence of FSD in Iran. In our research, sexual dysfunction was detected as a desire problem in 27.7% of women, an arousal problem in 13.9%, a lubrication problem in 7.1%, an orgasm problem in 7.8%, a satisfaction problem in 3.5% and a pain problem in 19% and the prevalence rate of total sexual dysfunction was 34.3% in women. Study by Nappi et al. showed the prevalence of an arousal problem in 22.3%, a lubrication problem in 19.1%, an orgasm problem in 22.5%, a satisfaction problem in 22.9%, a pain problem in 20.2% and a desire problem in 21.2% of subjects (17). In a study conducted in Greece, prevalence of sexual dysfunction was reported 69.31% (1). In another survey conducted by Amidu et al. on 400 healthy women between 18 and 58 years old, prevalence of sexual dysfunction was revealed 72.8% (18). Mercer et al., who conducted a survey on sexual function problems and help seeking behavior in Britain found that 53.8% of women had at least one sexual problem lasting at least one month in the previous year (19), While other studies have reported lower rates (up to 25%) (5). There is a large difference in the prevalence of sexual dysfunction between countries. It is difficult to compare the results of studies because in different countries, many factors may affect the prevalence of sexual dysfunction. However, this phenomenon might be explained by characteristics of the population, lack of validated FSD Questionnaire, definition of sexual dysfunction in various populations, using different methods, culture and the social environment. All of these factors, and many others, probably affect the prevalence of sexual function. Additionally, the variation in the levels of normal sexual function and sexual function importance to individuals and cultural attitudes also complicate determination of FSDs (1).

Our findings indicate that the factors of age, education level, age at menarche, number of sex and knowledge were predictors of sexual function. Several studies have shown that age is the most important risk factors for FSD (20-22). Oksuz et al reported similar results (23). Smith et al found that women with 60 years of age and older, had the highest incidence of sexual problems (24); they also reported a decrease in sexual desire (25), likely due to the hormonal changes of menopause.

A sexual function decrement with increasing age has also been observed in longitudinal and cross-sectional studies (26-28). Also, the experience of sexual problems was decreased with higher educational levels in women and men (29). In fact, it seems that higher education provide more opportunity to have more reproductive health information and to use health care services effectively. Research showed that risk factors for FSD include age, sexually transmitted disease, lower educational attainment, physical health, and life-style (23).

Female sexual dysfunction (FSD), a multifactorial disorder, is a combination of psychological, biological and individual components (22, 30, 31). Sexuality is not only influenced by family, societal and religious

beliefs but also is affected by aging, health status and personal experience as well as socio-economic status (18).

In this study, subjects were selected randomly from health care centers. The predictors of sexual function were determined in reproductive women and therefore, generalization of the results to other age groups should be undertaken with caution. It is recommended to do complementary studies on menopausal women. Besides, a similar study can be performed in women referring to the private sector. Researches on men can also be performed. Another recommendation is to present necessary educational interventions on sexual matters for couples and investigating its effect on sexual behavior.

Conclusion

According to the results, sexual function of the women in this study was in a borderline level. Considering the critical impact of sexual function on the health of couples, sexual function predictors are significant to help and plan prevention programs.

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