Clinical and Experimental Health Sciences

Evaluation of Sexual Functions in Women Using Hormonal or Non-Hormonal Contraceptives

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ABSTRACT

Objective: Female sexual dysfunction is a common condition that negatively impacts the psychological health and quality of life of the affected individuals. Therefore, this study aims to assess sexual function changes in women using hormonal and non-hormonal contraceptives.

Methods: We assessed 380 women who visited three Family Health Centers in Manisa, Turkey. Female Sexual Function Index (FSFI) and Beck Depression Inventory (BDI) questionnaires were used to get data. Regression and correlation analyses were applied to determine the relationship and level of sexual function of participants.

Results: According to FSFI cut-off score ≤26.55, the prevalence of female sexual dysfunction (FSD) was determined in 35.4% and 48.0% of sexual function changes and FSFI score was found 26.5±4.3 and 27.1±4.1 in women using non-hormonal and hormonal contraceptives. In regression analysis, women having higher education, satisfied with their sexual life, and women stating that their husband satisfied with non-hormonal contraceptive usage had high score in FSFI. Of those women, 6.6% scored ≥17 on the BDI.

Conclusion: The use of hormonal and non-hormonal contraceptives is important for the improvement sexual quality of women planning appropriate initiatives. Therefore, healthcare practitioners and providers should assess women's risk factors for FSD, arrange for extra follow-up and assist with early diagnosis and treatment to improve women's sexual life.

Keywords: Women, Sexual dysfunction, Hormonal, Contraception.

1. INTRODUCTION

Female sexual function is a complex and sensitive topic affected by many factors including neurologic, endocrine, vascular, physical, psychological, social, and cultural variables (1-6). Female sexual dysfunction (FSD) may occur at any stage of a woman's life and affect 27% to 73% of women in the world and 37% to 68% of women in Turkey (2,3,5,7-9). It was linked to a variety of socio-demographic variables such as age, educational level, marriage duration, presence of children, and socioeconomic position (4-6,8,9). Physiological (obesity, chronic diseases, low testosterone level, lack of lubrication), psychological (anxiety, depression), medical (medications), affective (love or arrange marriage), and interpersonal (marital adjustment) factors were found important factors for the etiology of FSD (1,2,5,6,9-15). It was also pointed that the effects of contraceptives on sexual function were another factor influencing couples' sexual lives (10,12,16-19).

When a couple's sexual life suffers as a result of their contraceptive methods, many of them modify or cease using it (7,13,20-23). Because of the negative effects, the dropout rate of oral contraceptive, which was one of the most prevalent hormonal methods in Turkey was so high (29.8 percent) (24). Unprotected sexual intercourse was widespread in Canada and United States, according to a survey of 5600 people, due to a loss of desire (20). The most prevalent adverse effects of IUDs in terms of sexuality were feeling of intrauterine devices (IUDs) strings by the women's partner (13,22) and abnormal bleedings (13,21).

Especially, female hormonal contraceptive usage has been associated with a variety of physical and psychological side effects. Earlier researchers found that combining oral contraceptive with high dosage ethinyl estradiol reduced free testosterone levels, which positively linked with sexual desire, arousal, and vaginal lubrication (14-16), genital vascular (18), and hormone concentrations (2-10).

It is difficult to determine if it is depression that impacts sexuality or whether marital stress produced by a lack of sexual satisfaction and sexual desire contributes to depressed thoughts (14,25) due to mood changes and depressive symptoms that effect of hormonal contraception. Furthermore, just a few published research compared

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FSD with contraceptive techniques (hormonal and non-hormonal) (25-28). The current study aimed to determine sexual functioning in women who used either hormonal or non-hormonal contraception. We planned this study due to that there was a limited number of studies published on this issue. In this context, the two research questions are listed as below:

Research question 1: Does the use of contraceptives methods impact women sexual function?

Research question 2: Does the use of hormonal or non-hormonal contraceptives impact women sexual function?

2. MATERIALS AND METHODS

2.1. Design and Data Collection

This research was a descriptive and cross-sectional study. The data were collected by home visit taking prior consent from the women from October, 2015 and September, 2016. Their address information was obtained from family health centres. The husband's data was based on their wife's expressions.

2.2. Research Sample

The data were randomly collected from women in family health centres in Manisa, Turkey. Family health centres classified in three groups according to the location (rural, urban and semi-urban) based on Manisa Population and Health Research. Then three family health centres were selected randomly among 11 family health centres (29). The study population consisted of 16.211 women, whose ages were between 15 and 49 years, according to data from Manisa Provincial Health Directorate in 2015. The minimum sample size was calculated as 375 in Epi Info 2000 program with 5% error share and 95% confidence interval (based on the unknown prevalence of 50%). We included 380 women out of 16.211 women between the ages of 18–49 years who expressed the desire to participate the research. Participants had sexual life and had used any contraceptive methods at least three months. Women who were pregnant, lactating, or in the climacteric phase, as well as those with depression, cancer, hysterectomy, pelvic relaxing (cystocele or rectocele), and chronic illness were not participated in this research. Participants were categorized into two groups: those who used hormonal methods (combined oral contraceptive pill (COCP), once-a-month combined injectable (mesigyna) and depot medroxyprogesterone acetate-(DMPA), and those who used non-hormonal methods (male condoms, IUDs, withdrawal, tubal ligation).

2.3. Measurement Instruments (Questionnaires)

Socio-demographic and reproductive characteristics forms that were prepared by the researcher and Female Sexual Function Index (FSFI) and Beck Depression Inventory (BDI) used for data collection. BDI was developed by Beck et al. (1961) (30), and adapted to Turkish by Hisli (1988)(31). It has 21 items and, women with a BDI score of 17 or higher were evaluated as having the possibility of experiencing depression. Its Cronbach alpha reliability coefficient was found as 0.87 in this study. FSFI was developed by Rosen et al. (2000) (32) and adapted to Turkish by Oksuz and Malhan (2005) (33). It has 19 questions and six dimensions: desire, arousal, lubrication, orgasm, satisfaction, and pain. The FSFI total score ranges from 2 to 36, with higher levels indicating improved sexual function. A total FSFI score ≤26.55 is thought to indicate a high risk of sexual dysfunction (10,14). The Cronbach alpha reliability coefficient was found as 0.88 in this study.

2.4. Ethics approval and consent to participate

The study was authorized by the University of Manisa Celal Bayar's Ethics Committee (date: 27.05.2015/ number: 20478486) and the Manisa Health Director. The purpose of the study was described to all of the participants, and signed informed permission was obtained from all of the women.

2.5. Statistical analysis

Qualitative variables were represented as frequencies, and quantitative variables as mean ± standard deviation. The quantitative variables were analysed with the Kolmogorov–Smirnov normality test. Chi-Square test was used to evaluate the association between qualitative variables to compare a quantitative variable among groups, and independent-sample T test was used to determine the significance of associations between characteristics of women and FSFI total and sub-score. After confirming the data had normality, linearity and homoscedasticity we applied to multiple regression analysis to check the relationship the between independent, presented at Figure 1, and dependent variable (FSFI total and sub-scores). Pearson's correlation was used to examine the correlation between FSFI and BDI scores. The analyses were performed using the SPSS software version 15.0 and $p < 0.05$ was considered significant.

3. RESULTS

3.1. Descriptive characteristics of the participants

Descriptive characteristics of the participants are presented in Table 1. The groups were homogeneously aged, with a mean age of 33.5±6.5 years and of 51.1% with the range of 31 to 40. Overall, 37.4% of the women were primary school degree, 28.2% were employee and 48.7% had a normal body mass index. Most of the participants (59.5%) had loved marriages. In this study, 46.9% (30.3% COCP, 16.1% mesigyna, 0.5% DMPA) and 53.1% (14.2% male condom, 13.7% IUD, 13.2% withdrawal, 12% tubal ligation) of women using hormonal and non-hormonal methods. Women's satisfaction of their sexual life and contraceptive methods are presented in Table 2.

Table 1. *Descriptive characteristics of the women and husband (n=380)*

Characteristic of women	n	%	Characteristics of women	n	%
Age groups of women			**Age groups of husbands**		
18-30 age	128	33.6	18-30 age	74	19.5
31-40 age	194	51.1	31-40 age	192	50.5
≥41 age	58	15.3	≥41 age	114	30.0
Education of women			**Education of husbands**		
Illiterate / literate	35	9.2	Illiterate / literate	11	2.8
Primary school	142	37.4	Primary school	116	30.5
Secondary school	50	13.2	Secondary school	69	18.2
High school	105	27.6	High school	99	26.1
University	48	12.6	University	85	22.4
Employment status of women			**Employment status of husbands**		
Unemployed	273	71.8	Employed	368	96.8
Employed	107	28.2	Unemployed	12	3.2
Body mass index of women					
Underweight (≤19,7 kg/m^2)	28	7.3	**Income status of family**	91	23.9
Normal (19,8-26 kg/m^2)	185	48.7	Low	270	71.1
Overweight (26,1-29 kg/m^2)	87	22.9	Medium	19	5.0
Obese (≥29,1 kg/m^2)	80	21.1	High		
Number of pregnancy					
No pregnancy	4	1.0	**Marital adjustment**		
1 pregnancy	70	18.4	Very compatible	76	20.0
2 pregnancies	142	37.4	Compatible	190	50.0
3 pregnancies	84	22.1	Moderate compatible	101	26.6
≥4 pregnancy	80	21.1	Incompatible	13	3.4
Miscarriage			**Type of marriage**		
Yes	94	24.7	Arranged	154	40.5
No	286	75.3	Loved	226	59.5
Stillbirth			**Hormonal contraceptive method use**		
Yes	5	1.3	**(n=178)**	115	64.6
No	375	98.7	Combined oral contraceptive pill	61	34.3
Induced abortion			Mesigyna	2	1.1
Yes	78	20.5	DMPA	178	100.0
No	302	79.5	Total		
Health insurance			**Non-hormonal contraceptive method use (n=202)**		
Yes	368	96.8			
No	12	3.2	Male condom	54	26.7
Residence of place			Intrauterine device	52	25.7
Rural	96	25.3	Withdrawal	50	24.8
Semi urban	205	53.9	Tubal ligation	46	22.8
Urban	79	20.8	Total	202	100.0

3.2. The relationship between sexual dysfunction and the usage of contraception.

In this study rate of FSD was found as 42.1% among the women. As seen in Table 3, the risk of FSD in non-hormonal contraceptive users (48.0%) was considerably greater than in hormonal methods (35.4%) ($p<0.05$) Although the mean FSFI scores in the non-hormonal contraceptive users group (26.5±4.3) were lower than in the hormonal contraceptive users group, there was no statistically significant difference between the groups (27.1±4.1) ($p>0.05$).

3.3. The relationship between women characteristics, FSFI and sub-score

Figure 1 depicts the important factors found in univariate analysis between women's characteristics and FSFI and sub-score. The results of multiple regression analysis showed

that women's characteristics were revealed to be statistically significant with FSFI total and sub-score. According to the results of the regression analysis in Table 4, the most of the FSFI dimensions (desire, arousal, lubrication, satisfaction orgasm, and total score) were significantly lower in women who were dissatisfied with their sexual life ($p<0.05$). The desire and orgasm score was found higher in women of advanced age. Women with higher levels of education had higher levels of arousal and total FSFI. Also, women who had a compatible marriage with their husband scored higher on desire and contentment. Women who had a working husband had a greater level of contentment, women who had sexual intercourse three or more times per week had a higher desire score and women who indicated that their sexual desire increased after menstrual cycle had better arousal score. The sexual desire score was found to be lower among women who had four or more pregnancies. When compared to other participants, women who underwent tubal ligation showed a lower level of satisfaction. Women who were pleased with the use of COCP worked had higher orgasm scores. Participants who were unsatisfied with the usage of mesigyna scored lower on lubrication. It is found that women who stated that their husband was satisfied with non-hormonal contraceptive had better total FSFI score.

3.4. The correlation between dimensions of FSFI and BDI score

Pearson's correlation between dimensions of FSFI and BDI score was performed (see Table 5). Table 5 showed that the highest correlation was found between total FSFI score and arousal sub-score ($r=0.787$; $p< 0.0001$). While a statistically significant correlation was found between the total FSFI score and the averages of desire, lubrication, orgasm, and satisfaction scores ($p<0.0001$), a significant negative correlation was found between FSFI and BDI ($r=-0.230$, $p<0.0001$).

Table 2. *Women's satisfaction of their sexual life and hormonal or non-hormonal methods*

Characteristics	n	%	Characteristics	n	%
Frequency of sexual intercourse			**Change of sexual desire after menstruation**		
Once a week	96	25.3			
Twice a week	115	30.3	Increases	103	27.1
Three times a week	110	28.9	Decreased	38	10.0
Four times and more a week	59	15.5	Unchanged	239	62.9
Satisfaction of sexual life of women			**Satisfaction of sexual life of husband**		
Very satisfied	26	6.8	Very satisfied	43	11.3
Satisfied	262	68.9	Satisfied	283	74.5
Moderately satisfied	73	19.3	Moderately satisfied	31	8.2
Unsatisfied/ very unsatisfied	19	5.0	Unsatisfied/ very unsatisfied	23	6.0
Women's satisfaction of hormonal methods (n=178)			**Husband's satisfaction of hormonal methods (n=178)**		
Satisfied	143	80.3	Satisfied	170	95.5
Moderately satisfied	22	12.4	Moderately satisfied	3	1.7
Unsatisfied	13	7.3	Unsatisfied	5	2.8
Women's satisfaction of non-hormonal methods (n=202)			**Husband's satisfaction of non-hormonal methods (n=202)**		
Satisfied	171	84.6	Satisfied	162	80.2
Moderately satisfied	21	10.4	Moderately satisfied	21	10.4
Unsatisfied	10	5.0	Unsatisfied	19	9.4

Table 3. *Relationship between sexual dysfunction and contraception use*

	Sexual dysfunction				Test
Contraceptive methods ***	**With** FSFI score≤26.55		**No with** FSFI score>26.55		
	n	**%**	**n**	**%**	**x^2=6,188 p=0.017***
Hormonal contraceptive	63	35.4	115	64.6	
Non-hormonal contraceptive	97	48.0	105	52.0	
Total	160	42.1	220	57.9	
	Total FSFI scores				
	Mean±SD		**Min/Max**		**Test**
Hormonal contraceptive	27.1±4.1		12.4/33.4		t=1.556 p=0.121**
Non-hormonal contraceptive	26.5±4.3		14.2/34.8		

Pearson Chi-square test, ** Independent-sample t test, * The percentage was calculated according to rows*

Table 4. *Relationship between characteristic of women and FSFI score according to regression analysis*

		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
Desire	(constant)	1.669	1.097		1.521	0.133
	Age of women	0.042	0.018	0.279	2.310	**0.024**
	*Marital adjustment	-0.294	0.123	-0.241	-2.385	**0.020**
	Number of pregnancy	-0.229	0.090	-0.273	-2.548	**0.013**
	*Women's satisfaction with their sexual life	-0.566	0.148	-0.412	-3.827	**0.000**
	Frequency of sexual intercourse	0.225	0.071	0.309	3.146	**0.002**
Arousal	(constant)	3.736	0.693		5.395	**0.000**
	Education of women	0.204	0.049	0.235	4.126	**0.000**
	*Women's satisfaction with their sexual life	-0.645	0.083	-0.386	-7.795	**0.000**
	*Change of sexual desire after menstruation	-0.119	0.054	-0.098	-2.197	**0.029**
Lubrication	(constant)	23.320	4.379		5.326	**0.000**
	* Health insurance	-4.464	1.918	-0.257	-2.327	**0.024**
	* Satisfaction of mesigyna	2.725	0.743	0.418	3.668	**0.001**
	*Women's satisfaction with their sexual life	-2.301	0.823	-0.370	-2.979	**0.007**
Orgasm	(constant)	15.246	2.232		6.831	**0.000**
	Age of women	0.082	0.038	0.192	2.162	**0.033**
	* Satisfaction of combined oral contraceptive	-0.936	0.454	-0.179	-2.062	**0.042**
	*Women's satisfaction with their sexual life	-2.362	0.483	-0.451	-4.891	**0.000**
Satisfaction	(constant)	5.780	0.582		9.929	**0.000**
	* Marital adjustment	-0.263	0.055	-0.222	-4.808	**0.000**
	*Employment status of husband	-0.532	0.226	-0.103	-2.356	**0.019**
	*Use tubal ligation	0.254	0.124	0.091	2.041	**0.042**
	*Women's satisfaction with their sexual life	-0.521	0.067	-0.368	-7.745	**0.000**
Pain	(constant)	4.567	0.578		7.909	**0.000**
	Body mass index of women	0.039	0.016	0.169	2.388	**0.018**
	*Husband's satisfaction of non-hormonal methods	-0.273	0.127	-0.149	-2.141	**0.034**
Total FSFI score	(constant)	27.457	3.674		7.474	**0.000**
	Education of women	0.734	0.272	0.225	2.699	**0.008**
	*Husband's satisfaction of non-hormonal methods	-1.104	0.426	-0.163	-2.589	**0.010**
	*Women's satisfaction with their sexual life	-2.541	0.418	-0.401	-6.085	**0.000**

**Reverse code*

Table 5. *Pearson's correlation between subscales of FSFI and BDI score*

		BDI	Desire	Arousal	Lubrication	Orgasm	Satisfaction	Pain
BDI	r							
	p							
	n							
Desire	r	-0.149(**)						
	p	**.004**						
	n	380						
Arousal	r	-0.153(**)	0.613(**)					
	p	**.003**	**.000**					
	n	380	380					
Lubrication	r	-0.098	0.186(**)	0.185(**)				
	p	.055	**.000**	**.000**				
	n	380	380	380				
Orgasm	r	-0.184(**)	0.502(**)	0.648(**)	0.178(**)			
	p	**.000**	**.000**	**.000**	**.000**			
	n	380	380	380	380			
Satisfaction	r	-0.266(**)	0.473(**)	0.604(**)	0.256(**)	0.623(**)		
	p	**.000**	.000	**.000**	**.000**	**.000**		
	n	380	380	380	380	380		
Pain	r	-0.086	0.186(**)	0.134(**)	0.234(**)	0.145(**)	0.109(*)	
	p	.094	**.000**	**.009**	**.000**	**.005**	**.034**	
	n	380	380	380	380	380	380	
FSFI	r	-0.230(**)	0.717(**)	0.787(**)	0.507(**)	0.778(**)	0.744(**)	0.481(**)
	p	**.000**	**.000**	**.000**	**.000**	**.000**	**.000**	**.000**
	n	380	380	380	380	380	380	380

** p<0.05, ** p<0.01*

4. DISCUSSION

In the current study, we evaluated relationship between sexual functions and usage of hormonal or non-hormonal contraceptives. The study is significant since it was the first to investigate the effects of hormonal or non-hormonal contraceptives on women's sexual functions in Manisa, Turkey. In the study, 42.1% of women had FSD. In the literature, there are several studies that support our research findings. According to a meta-analysis of 95 studies, the rate of FSD was found 40.9% all of the population 40.2% in Africa, 39.1% in Europe and 32.1% in non-European West (34). The prevalence of FSD in different countries ranged from 27% in US (35) and Iran (36), 38.7% in Pakistan (28), 60.2% in China (37) to 73% in India (2). In Turkey, the FSD rate has been found to range between 37.7% and 68.8% (3,5,9). Sexual dysfunction was a widespread concern and problem in women, as evidenced by the findings of these studies.

Age, educational level, health insurance, number of pregnancy, marital adjustment, satisfaction of contraceptive methods, frequency of sexual intercourse was found as risk factors for FSD in this research. Many other studies support these findings (2-10,15,26,35,38-44). Another finding of the study was that women who had tubal ligation were less satisfied with their contraceptive than women who used alternative contraceptive methods. Similarly, several Iranian studies resulted that satisfaction (45), sexual desire/arousal scores (19), and all FSFI sub-scale scores (46) were remarkably low in women who had tubal ligation.

In literature, there were different studies examined the effect of contraceptives on sexuality. FSD was lower in women who used hormonal methods in our study, which was consistent with previous research (25,37), but contradictory to those of other research (3,12,28, 47, 48). In women who used hormonal methods, studies found that desire (14), arousal (12,14,18), orgasm (12), and total FSFI scores (14,47) were low, but vaginal dryness (12) and pain (18) were high According to these studies, contraceptive has a negative impact on sexuality by decreasing circulating testosterone levels as well as serum levels of estradiol and progesterone. In contrast, several researchers have found that hormonal methods have a positive effect on sexuality. Women who used hormonal contraception, for example, had a lower risk of dyspareunia (16), as well as higher sexual activity, higher desire, and orgasm and FSFI scores (25). Non-contraceptive effects of hormonal methods are relief of gynaecologic pain, decrease of anxiety and discomfort, eliminate the fear of pregnancy, more stable levels of hormones throughout the cycle and less bleeding with the consequent lower risk of anaemia. All of these effects of hormonal contraception contribute to women's well-being and, as a result, to a probable enhancement in women's sexual function. Furthermore, many studies found no changes in sexual function as a result of contraceptive methods (16). The various findings on the

effects of hormonal contraception on women sexual function might be attributed to the fact that it is complicated and multidimensional. In addition, cultural differences between nations, perceptions of sexuality, and research methods all contributed to differences in results.

In this study women who used hormonal methods had a decreased FSD rate, and this finding is crucial for counselling women who plan to use hormonal methods. Because, in some countries, women had a negative perception of hormonal methods for a variety of reasons, including cancer, missed menstruation, sterility, nausea, back pain, headaches, dizziness, fatal abnormalities, infertility, hair loss, weight gain, and libido loss (13).

A negative correlation found between BDI and FSFI total and desire, arousal, orgasm and satisfaction sub-scores in this study. Subsequently, it confirming the suggestion that depression is a risk factor for FSD, as reported consistently in previous studies (2,9,13). On the other hand, depression may be associated with sexual problems. Further longitudinal studies are necessary to find the relationship between them.

5. CONCLUSION

This study assessed sexual function changes in women using hormonal and non-hormonal contraceptives. The main finding of this study is 40% of women had FSD and women using hormonal method had higher score of FSFI. Furthermore, women with a higher level of education, who were satisfied with their sexual lives, and whose husbands were satisfied with non-hormonal methods had a higher FSFI score. Healthcare practitioners and providers may assess women's risk factors for FSD, arrange for extra follow-up, give preventative care, and, if required, assist with early diagnosis and treatment to improve women's health. Potential sexual adverse effects of hormonal and non-hormonal methods should be thoroughly described, and a patient-centered decision should always be supported.

Study limitations

There are some limitations of this study. Firstly, the study was conducted as a cross-sectional study in Manisa, a city in the west of Turkey. Therefore, the findings may not be generalised in whole Turkey. Secondly, women's sexual functions before contraceptive use were not evaluated. Thirdly, husband's opinions of sexual life were evaluated according to women's expressions. Morever, another study limitation includes a small sample size. Future research and studies with a larger sample are needed to confirm the findings of this study.

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