

## Effects of the COVID-19 Pandemic on Mental and Sexual Health of Women

### KOVID-19 Pandemisinin Kadınların Ruh ve Cinsel Sağlığı Üzerindeki Etkileri

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#### ABSTRACT

**Objective:** This study was conducted to determine the effects on women's mental and sexual health of the COVID-19 pandemic.

**Materials and Methods:** The research in the case-control involved 315 women, out of which 171 were part of the control group. These women had no history of COVID-19 infection before and were free from any mental or physical health issues. The remaining 144 female participants formed the case group. They had contracted COVID-19 disease at least two months ago and had tested negative.

**Results:** Based on the study data, women who have had COVID-19 show a higher rate of moderate to severe depression ( $p<0.05$ ). Additionally, anxiety, depression, and negative self-esteem are more severe among those who have had COVID-19 compared to those who have not ( $p<0.05$ ). The study also found that women who have not had COVID-19 experience better sexual function ( $p<0.05$ ).

**Conclusions:** As a result, this study showed that anxiety along with depressive symptoms increased in participants with COVID-19 disease and that these parameters negatively affected female sexual function.

**Keywords:** BDI, BSI, COVID-19, female, sexual function

#### ÖZ

**Amaç:** Bu çalışma KOVID-19 pandemisinin kadınların mental ve cinsel sağlığı üzerindeki etkilerini belirlemek amacıyla yapıldı.

**Materyal ve Metot:** Vaka kontrol tipte olan araştırmaya toplam 315 kadın katıldı. Kadınlardan 171'i daha önce KOVID-19 enfeksiyonu geçirmemiş, mental ve fiziksel açıdan sağlık sorunu bulunmayan kontrol grubunu oluşturan kişilerdi. 144 kadın katılımcı ise en az iki ay önce KOVID-19 hastalığını geçirmiş ve testi negatifleşmiş vaka grubunu oluşturuyordu.

**Bulgular:** Çalışmadan elde edilen verilere göre orta ve şiddetli depresyona sahip olan kadınların oranı KOVID-19 geçirenlerde daha fazladır ( $p<0.05$ ). KOVID-19 geçirenlerde anksiyete, depresyon ve olumsuz benlik durumları hastalığı geçirmeyenlere kıyasla çok daha şiddetli düzeylerde görülmektedir ( $p<0.05$ ). KOVID-19 geçirmeyen kadınların daha iyi bir cinsel fonksiyona sahip olduğu saptanmıştır ( $p<0.05$ ).

**Sonuç:** Sonuç olarak bu çalışma, KOVID-19 hastalığı geçiren katılımcılarda depresif belirtiler ile beraber kaygının arttığını ve bu parametrelerin kadın cinsel işlevini olumsuz etkilediğini gösterdi.

**Anahtar Sözcükler:** BDE, Cinsel işlev, Kadın, KSE, KOVID-19

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## INTRODUCTION

COVID-19 is a viral disease that negatively affects many human systems, especially the respiratory system.<sup>1-3</sup> Due to the coronavirus pandemic, isolation has caused economic damage, loneliness, fear of death, and depression worldwide. Self-isolation and social distancing have led to undesirable psychological effects and negatively impacted sexual health.<sup>4-6</sup>

After quarantines and curfews were declared following the pandemic, new routines began to form in the family and social relationships, causing significant disruptions in many social areas.<sup>3</sup> The occurrence of many anxiety and depression disorders became easier in people because of the increase in time spent at home, fear of one's health or the health of loved ones, and the resulting economic losses during this period.<sup>4,7</sup> Common psychological reactions during the COVID-19 pandemic include anxiety, depression symptoms (16-28%), stressful mood (8%)<sup>8</sup> and sexual dysfunction (81%).<sup>9</sup>

The World Health Organization defines sexual health as the physical, emotional, mental, and social well-being of the individual.<sup>10</sup> Sexual dysfunction is a condition where an individual is unable to attain satisfaction during any stage of sexual intercourse. It can be caused by organic factors and psychological factors such as anxiety and depression.<sup>11</sup> Although changes in sexual activity and behaviors are the result of a very complex process, it is already known that biological, social, economic, political, cultural, and psychological factors are directly associated with the sexual activity of the individual.<sup>12</sup> According to studies, sexual satisfaction and sexual activity were negatively affected during the pandemic period.<sup>13,14</sup> COVID-19 might negatively affect female sexuality because of the fear of contamination, stressful conditions, and changes in daily life that come with the pandemic.<sup>6,15</sup> During home quarantine, longer contact between couples intensified negative emotions and increased marital conflicts.<sup>16</sup> While the sexual lives of some couples are negatively affected by COVID-19 infection due to fear of disease and lack of psychological well-being, some studies have reported that social isolation and increased time spent at home cause an increase in the frequency of sexual activity.<sup>5,9,15</sup>

Our study aims to investigate the effects of coronavirus infection on women's mental and sexual health. Through identifying these effects, we aim to take preventive measures for public and family health in future epidemics with similar characteristics and to raise awareness among health professionals and couples about the potential issues they may face.

## MATERIALS AND METHODS

**Ethical Principles of Research:** The study was conducted following ethical principles at every stage, with written permission obtained from the ethics committee before implementation (Date: 26.05.2021, decision no: 2021-05/19). The study was carried out following the international declaration, guidelines, etc.

**Type of Study:** The study had a case-control.

**The Place of the Study:** The study was conducted at Sivas Cumhuriyet University, Gynecology and Children's Hospital, Gynecology outpatient clinic.

**Population and Sample of the Study:** The study population included female patients who visited our gynecology clinic between June 1, 2021 and March 1, 2022. The study included 315 women who met the following criteria: sexually active women who have not had COVID-19 and those previously infected with COVID-19.

The researchers conducted face-to-face interviews with women who provided written consent to participate in the study. Necessary permissions were obtained from the Ministry of Health, our university ethics committee, and the hospital to examine the participants' retrospective hospital test results.

**Inclusion Criteria:** Being between the ages of 18-45, not being pregnant, not being vaccinated, not having chronic pelvic pain and pelvic organ prolapse, not having a chronic disease (diabetes, cardiovascular disease, etc.), and having a signed consent form agreeing to participate in the study. In addition to the specified criteria, we included individuals in the control group who had not previously been infected with COVID-19.

**Exclusion criteria:** Women who do not have a regular sexual life and a partner, women who have entered the menopausal period, those who use gynecological hormonal drugs including oral contraceptives, individuals who have undergone ovarian surgery or hysterectomy for various reasons, and individuals who are under psychiatric treatment and using medication.

**Data Collection Tools:** The data of the study were collected with the "Personal Data Form", which was created by the researchers in line with the literature data, "FSFI-Female Sexual Function Index", "BDI-Beck Depression Inventory", and "BSI-Brief Symptom Inventory" were used to collect the study data. We received permission from the authors via email to use the scales.

**Personal Data Form:** The form included 19 questions on socio-demographic, clinical, and obstetric characteristics.<sup>6,8</sup>

**Female Sexual Function Inventory (FSFI):** FSFI is a Likert-style scale used to evaluate sexual dysfunction in women. The validity and reliability study

of the FSFI was conducted by Rosen et al. (2000),<sup>17</sup> and the Cronbach's Alpha Coefficient was found to be 0.82. The Turkish validity and reliability analysis of the scale was conducted by Aygin and Aslan (2005).<sup>18</sup> The scale has 19 questions to determine the participants' ongoing sexual functions in the last four weeks. Participants are asked to tick only one option that suits them during the last four weeks. The questions in the items have 6 sub-dimensions (Satisfaction, Desire, Lubrication, Orgasm, Arousal, and Pain). Better sexual function is associated with higher scores, and the scores for each domain vary between 0 and 5, with the maximum total score in each sub-dimension being 6. The minimum score is 2, and the maximum total score is 36. The sexual function status is evaluated using the FSFI score. A score of 30 points or more indicates good sexual function, while a score between 23 and 29 points indicates moderate sexual function, and a score of less than 23 points indicates poor sexual function.<sup>17</sup> Cronbach's Alpha values of the scale were found to be 0.98 in Aygin and Eti Aslan's study.<sup>18</sup> In our research, the Cronbach Alpha coefficient obtained for FSFI was found to be 0.94.

**Beck Depression Inventory (BDI):** BDI is a self-report rating scale that measures the severity of depression. The main version of the scale was prepared by Beck et al.<sup>19</sup> The validity and reliability study of the Beck Depression Inventory, which was adapted to Turkish society, was conducted by Hisli.<sup>20</sup> The Cronbach Alpha coefficient of BDI was evaluated as 0.82. The 21 items in the BDI are evaluated on a graded scale that ranges from "0" to "3", depending on the severity of depression. In the form, participants are asked to self-question their appetite, sleep patterns, decision-making, work status, and suicidal thoughts. The score range is 0-63, with scores from "0" to "9" indicating no depression, scores between 10-16 indicating mild depression, scores between 17-29 indicating moderate depression, and scores between 30-63 indicating severe depression.<sup>19</sup> The Cronbach's alpha value of the scale in our study is 0.79.

**Brief Symptom Inventory (BSI):** BSI is a concise version of the Symptom Checklist 90-Revised (SCL-90-R) that evaluates psychological distress and psychiatric symptoms experienced in the past month. The SCL-90-R is a self-reported screening tool used to assess general psychiatric symptomatology. BSI is a self-evaluation inventory developed by Derogatis to make a psychopathological evaluation and identify some psychological symptoms.<sup>21</sup> Derogatis (1992) identified the subscales of BSI and found that internal consistency coefficients ranged from 0.71 to 0.85.<sup>21</sup> The adaptation study of this scale was conducted by Şahin and Durak.<sup>22</sup> In their validation study, the scale's Cronbach's alpha value was 0.94.<sup>22</sup>

It has a Likert-style self-rating design that screens psychological symptoms and consists of 53 items and 5 sub-dimensions (Anxiety, Depression, Negative Self, Somatization, and Anger). The score range is between 0-212. The scale can be applied to adolescent and adult individuals and groups. The individual who answers the scale marks one of the following options for each question: (0) "Not at all", (1) "Very little", (2) "Moderately", (3) "Quite a lot", and (4) "Extremely". There is no time limit for answering the scale. Higher scores represent higher levels of symptomatology. The Cronbach's alpha value of the scale in our study is 0.96.

**Statistical Analysis:** All analyses were done with SPSS 23 (Statistical Package for the Social Sciences, version 23). The suitability of quantitative variables to normal distribution was examined with the Kolmogorov-Smirnov Test in the data evaluation, and the differences between frequency distributions in the groups for categorical variables were examined with the Chi-Square Test. The Mann-Whitney U Test was used to compare 2 groups for the variables. The strength and direction of relationships between the quantitative variables associated with the scales were evaluated using Spearman's rank correlation coefficient (RS). All statistical analyses were performed at 95% Confidence Interval.  $p < 0.05$  was considered significant.

## RESULTS

A total of 54.3% (n=171) of the participants had never had COVID-19 before, and 45.7% (n=144) had had COVID-19 at least once. No statistically significant relationships were detected between women's experience of COVID-19, some socio-demographic characteristics (i.e., age, education, family type, residence, etc.), smoking, number of pregnancies and children, and pregnancy plan care ( $p > 0.05$ ).

The COVID-19 pandemic negatively affected the quality of life in most women who had COVID-19 and participated in the study (n = 109, 75.7%) ( $p < 0.05$ ). The partners of 68.8% of women who had COVID-19 also had COVID-19. The sexual urges of 89.5% of women who did not have COVID-19 were not affected by COVID-19 ( $p < 0.05$ ) (Table 1).

According to the Beck Depression Inventory, the rate of those with moderate and severe depression was higher in those who had had COVID-19, but the rate of those with minimal and mild depression was higher in those who had not had COVID-19 ( $p < 0.05$ ). Upon evaluation of the short inventory, it was found that those who had COVID-19 experienced much more severe levels of anxiety, depression, and negative self-states compared to those who did not have the virus ( $p < 0.05$ ) (Table 2).

**Table 1.** Distribution of COVID-19 infection-related characteristics of the participants by having had a COVID-19 infection.

Specifications		Have you ever had COVID-19 infection before?, n=315		p-value
		No, n=171 (54.3) n (%)	Yes, n=144 (45.7) n (%)	
Has COVID-19 impacted your quality of life?	No.	77 (45.0) <sup>a</sup>	35 (24.3) <sup>b</sup>	0.000**
	Yes	94 (55.0) <sup>a</sup>	109 (75.7) <sup>b</sup>	
Has your partner had COVID-19 infection before?	No.	156 (91.2) <sup>a</sup>	45 (31.3) <sup>b</sup>	0.000**
	Yes	15 (8.8) <sup>a</sup>	99 (68.8) <sup>b</sup>	
Has COVID-19 impacted your sex drive?	No	153 (89.5) <sup>a</sup>	81 (56.3) <sup>b</sup>	0.000**
	Decreased	9 (5.3) <sup>a</sup>	54 (37.5) <sup>b</sup>	
	Increased	9 (5.3) <sup>a</sup>	9 (6.3) <sup>a</sup>	

Values are numbers (n) and percentages (%); P-value was determined by the Chi-Square Test; \* : p<0.05 ; \*\*p<0.001.  
<sup>a,b</sup>: When there was no significant difference between the study groups, the variables marked with the same letter (p<0.05).

**Table 2.** Distribution of Depression Severity Levels of BDI and Severity Levels of BSI Sub-dimensions by COVID-19 infection history.

Specifications			Have you ever had COVID-19 infection before?, n=315		p-value
			No, n=171 (54.3) n (%)	Yes, n=144 (45.7) n (%)	
BDI	Depression Levels	Minimal Depression (0-9)	80 (46.8) <sup>a</sup>	46 (31.9) <sup>b</sup>	0.000**
		Mild Depression (10-16)	69 (40.4) <sup>a</sup>	52a (36.1) <sup>a</sup>	
		Moderate Depression (17-29)	16 (9.4) <sup>a</sup>	32 (22.2) <sup>b</sup>	
		Severe Depression (30-63)	6 (3.5) <sup>a</sup>	14 (9.7) <sup>b</sup>	
	Anxiety	None	54 (31.6) <sup>a</sup>	21 (14.6) <sup>b</sup>	0.000**
		Mild	55 (32.2) <sup>a</sup>	40 (27.8) <sup>a</sup>	
		Moderate	33 (19.3) <sup>a</sup>	35 (24.3) <sup>a</sup>	
		Severe	21 (12.3) <sup>a</sup>	20 (13.9) <sup>a</sup>	
	Depression	Very Severe	8 (4.7) <sup>a</sup>	28 (19.4) <sup>b</sup>	0.000**
		None	51 (29.8) <sup>a</sup>	17 (11.8) <sup>b</sup>	
		Mild	49 (28.7) <sup>a</sup>	16 (11.1) <sup>b</sup>	
		Moderate	39 (22.8) <sup>a</sup>	34 (23.6) <sup>a</sup>	
BSI Sub-dimensions	Negative Self	Severe	22 (12.9) <sup>a</sup>	30 (20.8) <sup>a</sup>	0.000**
		Very Severe	10 (5.8) <sup>a</sup>	47 (32.6) <sup>b</sup>	
		None	52 (30.4) <sup>a</sup>	14 (9.7) <sup>b</sup>	
		Mild	44 (25.7) <sup>a</sup>	18 (12.5) <sup>b</sup>	
	Somatization	Moderate	33 (19.3) <sup>a</sup>	27 (18.8) <sup>a</sup>	0.000**
		Severe	25 (14.6) <sup>a</sup>	48 (33.3) <sup>b</sup>	
		Very Severe	17 (9.9) <sup>a</sup>	37 (25.7) <sup>b</sup>	
		None	35 (20.5) <sup>a</sup>	24 (16.7) <sup>a</sup>	
	Hosting	Mild	87 (50.9) <sup>a</sup>	72 (50.0) <sup>a</sup>	0.727
		Moderate	22 (12.9) <sup>a</sup>	23 (16.0) <sup>a</sup>	
		Severe	14 (8.2) <sup>a</sup>	1a (11.1) <sup>a</sup>	
		Very Severe	13 (7.6) <sup>a</sup>	9 (6.3) <sup>a</sup>	
Hosting	None	44 (25.7) <sup>a</sup>	21 (14.6) <sup>b</sup>	0.125	
	Mild	26 (15.2) <sup>a</sup>	24 (16.7) <sup>a</sup>		
	Moderate	41 (24.0) <sup>a</sup>	33 (22.9) <sup>a</sup>		
	Severe	30 (17.5) <sup>a</sup>	35 (24.3) <sup>a</sup>		
		Very Severe	30 (17.5) <sup>a</sup>	31 (21.5) <sup>a</sup>	

BDI: Beck Depression Inventory; BSI: Brief Symptom Inventory; P-value was determined by the Chi-square Test; \* : p<0.05; \*\*: p<0.001. <sup>a,b</sup> When there was no significant difference between the study groups, the variables marked with the same letter (p<0.05).

A statistically significant difference was detected between women with and without COVID-19 infection in terms of BDI and BSI total score values, anxiety and depression BSI sub-dimension total score values ( $p<0.001$ ). The median value of women with COVID-19 infection was higher than those without COVID-19 infection (Table 3).

This was also valid for the FSFI sub-dimension total score values of arousal, lubrication, satisfaction, and pain, which showed a significant difference ( $p<0.05$ ). Women who do not have COVID-19 have better sexual functions. Participants who did not have COVID-19 had significantly higher median total score values than those who had COVID-19 ( $p<0.05$ ). (Table 4).

**Table 3.** Total Scores for BDI, BSI, and BSI Sub-dimensions by COVID-19 infection history.

Specifications	Have you ever had COVID-19 infection before?, n=315					p-value	
	No, n=171 (54.3)			Yes, n=144 (45.7)			
	Median [Range]	(IQR)	Mean Rank	Median [Range]	(IQR)		Mean Rank
<b>BDI Total Score</b>	10 (5-14) [0-50]		141.266	12 (7-20) [0-54]		177.872	<b>0.000**</b>
<b>BSI Total Score</b>	15 (6-32) [0-84]		110.234	43 (29-71) [9-153]		214.722	<b>0.000**</b>
<b>BSI sub-dimensions</b>							
<b>Anxiety Total Score</b>	1 (0-4) [0-7]		86.131	15 (11-25.75) [7-64]		243.344	<b>0.000**</b>
<b>Depression Total Score</b>	1 (0-3) [0-12]		96.096	15 (10-24.75) [0-57]		233.885	<b>0.000**</b>
<b>Negative Self-Total Score</b>	3.30 (1-11) [0-41]		162.427	3 (1-7) [0-29]		152.743	0.345
<b>Somatization Total Score</b>	2 (0-6) [0-30]		152.544	3 (0-7) [0-21]		164.479	0.238
<b>Hostility Total Score</b>	2 (1-6) [0-24]		155.947	2 (1-7) [0-19]		160.437	0.661

BDI: Beck Depression Inventory; BSI: Brief Symptom Inventory; IQR: Interquartile range, (IQR)=(Q1 - Q3); [Range]=[min-max]; p-value was determined by the Mann-Whitney U Test; \*:  $p<0.05$ ; \*\*:  $p<0.001$ .

**Table 4.** Total Scores for FSFI and its sub-dimensions by COVID-19 infection history.

Specifications	Have you ever had COVID-19 infection before?, n=315					p-value	
	No, n=171 (54.3)			Yes, n=144 (45.7)			
	Median (IQR) [Range]		Mean Rank	Median (IQR) [Range]			Mean Rank
<b>FSFI Total Score</b>	18.91 (16.83-24) [9.41-30]		183.06	16.99 (14.01-19.56) [6-30.66]		128.21	<b>0.000**</b>
<b>FSFI Sub-dimensions</b>							
<b>Desire Total Score</b>	3 (2.50-4) [1-6]		166.39	3 (2-3.88) [1.20-6]		148.03	0.071
<b>Arousal Total Score</b>	3.25 (2.50-4)[1-6]		182.28	2.50 (1.75-3.50)[0-5]		129.16	<b>0.000**</b>
<b>Lubrication Total Score</b>	3.25 (2.75-4)[1-6]		175.94	3 (2-3.5)[0-5]		136.69	<b>0.000**</b>
<b>Orgasm Total Score</b>	3.33 (2.66-4) [1.66-6]		167.04	3 (2.66-3.66) [1.66-6]		147.27	0.057
<b>Satisfaction Total Score</b>	2.66 (2-4)[1-6]		173.91	2 (1.33-3) [1-6]		139.10	<b>0.000**</b>
<b>Pain Total Score</b>	5 (3.33-5)[1-6]		183.65	3.33 (2.66-4.33) [1-5]		127.54	<b>0.000**</b>

FSFI: Female Sexual Function Index; IQR: Interquartile range , (IQR)=(Q1 - Q3) ; [Range]=[min-max]; p-value was determined by the Mann-Whitney U test; \*:  $p<0.05$  ; \*\*:  $p<0.001$ .

The FSFI total score value was weakly and negatively correlated with the anxiety ( $r_s=-0.227$ ) and depression ( $r_s=-0.210$ ) sub-dimensions and was weakly and positively related with the negative self ( $r_s=0.130$ ) and somatization ( $r_s=0.113$ ) sub-dimensions. A weak and positive correlation ( $r_s=0.156$ ) was detected between the sexual desire

sub-dimension and the BDI total score. The pain sub-dimension was weakly and negatively correlated with the BDI total score ( $r_s=-0.156$ ) and the somatization ( $r_s=-0.135$ ) sub-dimension, but the BSI total score ( $r_s=-0.217$ ) was negatively correlated with the anxiety ( $r_s=-0.306$ ) and depression ( $r_s=-0.234$ ) sub-dimensions (Table 5).

**Table 5.** The relationships between the total scores of FSFI and its sub-dimensions with the total scores of BDI, BSI and BSI sub-dimensions.

Specifications		FSFI Total Score	FSFI Sub-dimensions					Pain
			Desire	Arousal	Lubrication	Orgasm	Satisfaction	
<b>BDI Total Score</b>	r	0.070	0.156	0.040	0.084	0.089	0.102	-0.156
	p	0.214	0.006**	0.477	0.138	0.116	0.070	0.005*
<b>BSI Total Score</b>	r	-0.094	-0.030	-0.082	-0.005	-0.017	-0.093	-0.217
	p	0.094	0.591	0.145	0.923	0.761	0.098	0.000**
Anxiety	r	-0.227	-0.069	-0.225	-0.131	-0.087	-0.156	-0.306
	p	0.000**	0.223	0.000**	0.020*	0.124	0.005*	0.000**
Depression	r	-0.210	-0.046	-0.233	-0.123	-0.090	-0.164	-0.234
	p	0.000**	0.421	0.000**	0.029*	0.112	0.003*	0.000**
BSI Sub-dimensions	r	0.130	0.074	0.117	0.162	0.034	0.039	-0.002
	p	0.021*	0.189	0.039*	0.004*	0.546	0.492	0.973
Negative Self	r	0.113	0.057	0.111	0.151	0.126	0.075	-0.135
	p	0.045*	0.317	0.049*	0.007*	0.026*	0.181	0.017*
Somatization	r	0.046	-0.012	0.028	0.113	0.076	-0.009	-0.065
	p	0.412	0.834	0.625	0.045*	0.179	0.87	0.248
Hosting	p							

FSFI: Female Sexual Function Index; BDI: Beck Depression Inventory; BSI: Brief Symptom Inventory; r: Spearman's rho correlation coefficient; \*: p<0.05; \*\*: p<0.001.

**DISCUSSION AND CONCLUSION**

The mental well-being of women has been affected by the COVID-19 pandemic.<sup>3,23</sup> When the Brief Symptom Inventory-53 data were evaluated in the study, anxiety, depression, and negative self-esteem scores were found to be higher in individuals with COVID-19 infection compared to the group without the disease. Many studies emphasize that depression and anxiety increased during the pandemic process.<sup>3,23,24</sup> We thought that high anxiety scores in patients with COVID-19 might be associated with phobic anxiety, infecting loved ones, the recovery process, and the danger of intensive care as a result of disease exacerbation.

The COVID-19 pandemic had impacts on women's sexual and mental health.<sup>6,23</sup> According to the data obtained in the study, as the severity of anxiety, depression, and stress perception increased during this period, an increase in sexual dysfunctions was observed in the women in the study group. In our study, the average BDI score of the patient group was found to be 12, and the FSFI total score was 16.99, which showed that the pandemic causes high levels of stress, depression, and sexual function problems. In the study of 1644 women, in which Szuster et al. examined the impacts of the COVID-19 pandemic on the mental and sexual health of Polish women who were of reproductive age, the average BDI score was 11, which corresponded to minimal depression.<sup>23</sup> A decrease was detected in the Short-Form (36) Health Survey evaluation scale, from a total of 82.2 points before the pandemic to 64.2 points during the pandemic period.<sup>6</sup>

Symptoms of anxiety and depression occur in people during pandemic periods.<sup>24</sup> It was reported in many studies that female sexual dysfunction rates were

higher in people with depression and anxiety, regardless of their severity and type.<sup>6,23,25</sup> In the present study, no significant relationships were detected between the FSFI total scores and total BDI and BSI scores according to sperm correlation analysis (p>0.05). However, a significant correlation was observed between the anxiety, depression, negative self, and somatization subgroups and the FSFI total score in the short symptom inventory (p<0.05). A statistically significant relationship was detected between the BDI total score and desire (p<0.05).

The COVID-19 pandemic caused a deterioration in women's sexual functions.<sup>25,26</sup> In the present study, it was observed that there was a significant decrease in sexual function arousal, lubrication, and satisfaction scores of women who had the infection compared to women who did not have it. The pain score on the FSFI scale was found to be higher in women who had not had coronavirus infection. The findings of our study, which included impairments in sexual functions, including FSFI scores, were supported by the results of many other studies.<sup>15,26</sup>

In the present study, it was found that the frequency of sexual intercourse decreased significantly (n:54,37.5%) in couples who had COVID-19 (p<0.00), and although the study was conducted on recovered patients, it was quite striking that women behaved in abstinence from sexuality like actively ill individuals. The frequency of sexual intercourse was one of the main factors that determined the sexual satisfaction level of individuals.<sup>27</sup> Studies similar to the present study also showed that the COVID-19 pandemic reduced the frequency of sexual intercourse.<sup>27</sup> A study conducted by Bowling and his colleagues included 247 women to examine the effects of COVID-19 on adult sexual life. Some of the

women reported that they experienced a decrease in their libido due to reasons such as financial insecurity and mental health issues.<sup>28</sup> What was striking in our results was that there were no changes in the frequency of sexual intercourse in the majority of women in the disease-free group (n:153, 89.5%). This finding is consistent with the results of the study by Micelli et al.<sup>29</sup>

Examining individuals' perceptions using qualitative data in our study is one of our limitations. Another limitation was that we examined unvaccinated individuals. Depending on the properties and doses of the vaccines, changes in mental and sexual health can also be investigated.

In conclusion, the present study showed that the disease had a significant impact on women's sexual behaviors during the pandemic period. It was also found that anxiety and depressive symptoms increased in participants with COVID-19, and the related parameters were negatively associated with female sexual function. Sexual health is fundamental to our overall well-being, and the results of the present study showed that sexuality is intertwined with all aspects of people's lives.

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