



# How Did the COVID-19 Pandemic Affect the Sexual Behavior of the Female Nurses Working in the North-Eastern Black Sea Region of Turkey? A Descriptive Study

COVID-19 Pandemisi Türkiye'nin Doğu Karadeniz Bölgesi'nde Çalışan Kadın Hemşirelerin Cinsel Davranışlarını Nasıl Etkiledi? Tanımlayıcı Bir Çalışma

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## ABSTRACT

**Aim:** Both coronavirus disease 2019 (COVID-19) and related precautions have led to social, economic, and psychological difficulties. We aimed to investigate the effects of COVID-19 on the sexual behavior of nurses working in the Blacksea region of Turkey.

**Material and Method:** This descriptive study included 120 female nurses older than 18 years, not menopausal, and married or in a regular sexual relationship. A questionnaire was administered to participants behind certain gynecologists between October 2020 and November 2020. According to the power analysis results, a sample size of 114 participants would allow us to reach a 5% deviation and a 95% confidence interval at an anticipated frequency of 50%. The Kolmogorov-Smirnov test, paired sample t-test, and McNemar test were applied. Demographic characteristics, frequency of sexual intercourse each month, use of contraception, desire to become pregnant, the existence of the menstrual disorder and vaginal infection, and female sexual function index (FSFI) scores of the participants were evaluated four weeks before onset and during the pandemic.

**Results:** While the frequency of sexual intercourse monthly significantly decreased during the pandemic ( $P=0.01$ ), contraception use ( $P=0.50$ ), desire to become pregnant ( $P=0.72$ ), menstrual disorder ( $P=1$ ), and frequency of vaginal infection ( $P=1$ ) did not show a significant difference from before the pandemic. The total FSFI score of participants significantly decreased during the pandemic ( $P<0.001$ ).

**Conclusion:** Sexual function of nurses deteriorated during the COVID-19 process, even though there was no change in their sexual health. Such studies can raise awareness and help apply early and adequate support policies to protect nurses from these adverse aspects of the pandemic and help them better handle its effects.

**Key words:** nurse; sexual function; menstrual disorder; female sexual function index; contraception; COVID-19

## ÖZET

**Amaç:** Hem Koronavirüs 2019 hastalığı (COVID-19) hem de ilişkili önlemler sosyal, ekonomik ve psikolojik zorlanmalara yol açmıştır. COVID-19'un Türkiye'nin kuzeydoğu Karadeniz Bölgesi'nde çalışan hemşirelerin cinsel davranışları üzerindeki etkisini incelemeyi amaçladık.

**Materyal ve Metot:** Bu tanımlayıcı çalışma, 18 yaşından büyük, menopozda olmayan, evli ve düzenli cinsel ilişkisi bulunan 120 kadın hemşireyi içermektedir. Ekim 2020-Kasım 2020 tarihleri arasında katılımcılara belirli jinekoloji uzmanları gözetiminde bir anket uygulanmıştır. Güç analizi sonuçlarına göre 114 katılımcılı bir örneklem büyüklüğü beklenen %50 sıklıkta, %5 sapma ve %95 güven aralığına ulaşılabilirliği sağlamaktadır. Kolmogorov-Smirnov testi, eşleştirilmiş gruplar t testi ve McNemar testleri uygulanmıştır. Katılımcıların demografik özellikleri, pandemi başlangıcından 4 ay önceki ve pandemi sürecindeki aylık cinsel birtakimlilik sıklığı, kontraseptif kullanımı, gebe kalma isteği, menstruel bozukluk ve vajinal enfeksiyon varlığı ve kadın cinsel işlev indeksi skoru değerlendirilmiştir.

**Bulgular:** Pandemi sürecindeki aylık cinsel birtakimlilik sıklığı pandemi öncesi döneme göre belirgin azalma gösterirken ( $P=0,01$ ), kontraseptif kullanımı ( $P=0,50$ ), gebe kalma isteği ( $P=0,72$ ), menstruel bozukluk ( $P=1$ ), ve vajinal enfeksiyon sıklığı ( $P=1$ ) pandemi öncesi döneme göre anlamlı değişiklik göstermemiştir. Ancak katılımcıların total kadın cinsel işlev indeksi skoru pandemi döneminde belirgin azalma göstermiştir ( $P<0,001$ ).

**Sonuç:** COVID-19 sürecinde hemşirelerin cinsel sağlığında değişiklik olmamasına karşın cinsel işlevinde bozulma kaydedilmiştir. Bu sonuçlar sayesinde pandeminin etkilerinden korumak ve pandemi etkilerini daha rahat karşılamak amacıyla erken ve yeterli destek verilmesi gerektiği düşünülmektedir.

**Anahtar kelimeler:** hemşire; cinsel fonksiyon; menstruel bozukluk; kadın cinsel işlev ölçgeği; kontrasepsiyon; COVID-19

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## Introduction

The novel coronavirus that emerged in December 2019 in Wuhan City, China, has spread rapidly across the globe, escalating into a pandemic with major public health implications<sup>1</sup>. COVID-19 infection was first identified in Turkey on March 11, 2020, and the first death occurred on March 17, 2020. When this study was performed, the north-eastern Black Sea area had one of the highest rates of COVID-19 infection in Turkey<sup>2</sup>. The increasing patient population raised the workload of healthcare professionals who were already struggling with the pandemic on the front line. Both the risk of infection and the increased workload have been shown to contribute to psychological distress and, in some cases, mental health disorders<sup>3</sup>. Given the established connection between stress and impaired sexuality, it is reasonable to conclude that the psychological consequences of the pandemic would also cause damage to the sexual lives of front-line health workers<sup>4,5</sup>. Recently, a study confirmed this opinion by revealing the negative effect of the COVID-19 pandemic on the sexual behavior of health care professionals<sup>2</sup>.

Although outbreaks caused great pain to the entire medical staff, previous studies demonstrated that they affected nurses more than doctors<sup>6</sup>. This was most likely due to the nature of the nurse's job, which required her to participate in both treatment and primary care services face to face, resulting in spending extended time with patients. Additionally, a recent paper confirmed increased anxiety and stress among nurses during the COVID-19 pandemic due to their fear of contracting the virus or unknowingly infecting others<sup>7</sup>. Therefore, the potential sexual problems nurses face during the COVID-19 pandemic need further consideration.

Sexual health, as a part of the general health definition, is crucial for overall well-being<sup>8</sup>. Few research has been conducted to determine the effect of COVID-19 on healthcare providers' sexual health and behavior<sup>9</sup>. As a result, literature on the impact of COVID-19 on the sexual behavior of one of the most psychologically vulnerable groups, nurses, is still scarce. This study aimed to determine how COVID-19 affected the sexual behavior of female nurses working in Turkey's one of the most affected regions, the North-Eastern Black Sea area.

## Materials and Methods

### *Study Population and Protocol*

This observational study was conducted between October 2020 and December 2020 in 2 tertiary care centers in Turkey's North-Eastern Black Sea region. Female nurses working at these centers, older than 18 years old, not menopausal, married, or in a regular sexual relationship (lasting at least six months) were eligible for inclusion. Participants who had a gynecological operation, urinary incontinence, pelvic organ prolapse, malignancy, psychiatric or neurological disease, cardiac or renal disease, or a positive test for COVID-19, and those living with someone who tested positive for COVID-19 were excluded. A questionnaire form (supplementary document 1) was administered to participants behind the certain gynecologists in each center participants were examined regarding gynecological complaints. The questionnaire covered two-time frames: at least four weeks before the pandemic in Turkey (March 2020) and the period following the pandemic's beginning.

The Institutional Ethics Committee approved the study. Informed consent was obtained from all participants.

### *Measures*

Baseline demographic characteristics including age, body mass index (calculated as weight in kilograms divided by square of height in meters), gravidity, parity, abortion count, alcohol consumption, and smoking were recorded. Frequency of sexual intercourse monthly, use of contraception, desire to become pregnant, history of the menstrual disorder and vaginal infection, and female sexual function index (FSFI) scores of the participants in each period were evaluated and compared. The FSFI developed by Rosen (female sexual function index in English-supplementary document 2) consists of 19 questions and assesses sexual functioning in women across six distinct domains: desire, arousal, lubrication, orgasm, satisfaction, and pain<sup>10</sup>. Answers to four of the questions were assigned 1–5 points, and answers to the remaining 15 questions were assigned 0–5 points. The total FSFI score ranges from 2–to 36, with higher scores indicating better female sexual function. As confirmed by Aydin and Aslan (female sexual function index in Turkish-supplementary document 3), the FSFI was found to be a reliable and valid method for assessing the sexual function of Turkish women<sup>11</sup>.

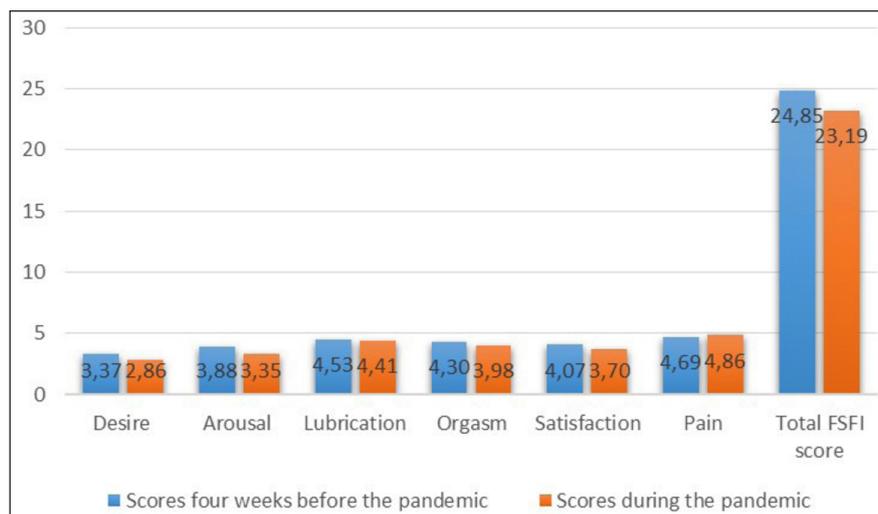


Figure 1. Study flowchart.

Table 1. Demographic characteristics of the female nurses

Variables	n=120
Age (year) (SD)	39.90±6.70
BMI (kg/m <sup>2</sup> ) (SD)	26.0±5.10
Gravidity (SD)	2.20±1.00
Parity (SD)	1.84±0.60
Abortion (SD)	0.40±0.10
Alcohol consumption n,%	
Yes	12 (10%)
No	118 (90%)
Smoking n,%	
Yes	33 (27.50%)
No	87 (72.50%)

Plus-minus values are mean ± standard deviation, SD: standard deviation, BMI: Body mass index.

### Statistical Analysis

SPSS version 25 (SPSS Statistics for Windows, Version 25. Armonk, NY, IBM Corp.) was used for statistical analysis. The Kolmogorov-Smirnov test was used to evaluate the distribution of normality. Numerical variables were expressed as mean ± standard deviation, and categorical variables were expressed as percentages. The Wilcoxon and McNemar tests compared average sexual desire, arousal, lubrication, orgasm, satisfaction, pain domain scores, total FSFI scores, and frequency of monthly sexual intercourse with the participants at two defined periods. McNemar test was used to compare percentages of contraception use, desire to become pregnant, the existence of menstrual disorder, and vaginal infection.  $P < 0.05$  was considered statistically significant.

### Results

After excluding 18 nurses for not meeting inclusion criteria, 30 for declining to participate, and 10 for not

completing the questionnaire, from 187 participants, 120 nurses were enrolled in the study (Fig. 1). The demographic characteristics of the final sample ( $n=120$ ) are presented in Table 1. The mean age and body mass indexes were  $39.90 \pm 6.70$  years and  $26.00 \pm 5.10$ , respectively. The mean gravidity, parity, and abortion count were  $2.20 \pm 1.00$ ,  $1.84 \pm 0.60$ , and  $0.40 \pm 0.10$ , respectively. Alcohol consumption percent of participants was 10% ( $n=12$ ) and smoking ratio was 27.70% ( $n=33$ ).

While the frequency of sexual intercourse each month significantly decreased during the pandemic ( $p < 0.05$ ), contraception use ( $p=0.52$ ), desire to become pregnant ( $p=0.72$ ), menstrual disorder ( $p=1$ ), and frequency of vaginal infection ( $p=1$ ) did not show a significant difference as depicted in Table 2.

The total FSFI score of participants significantly decreased during the pandemic compared to pre-pandemic ( $p < 0.001$ ), as did sexual desire ( $p < 0.001$ ), arousal ( $p < 0.001$ ), lubrication ( $p < 0.001$ ), orgasm ( $p < 0.001$ )

Table 2. Comparison of participants' sexual behavior and health parameters before the pandemic and during the pandemic

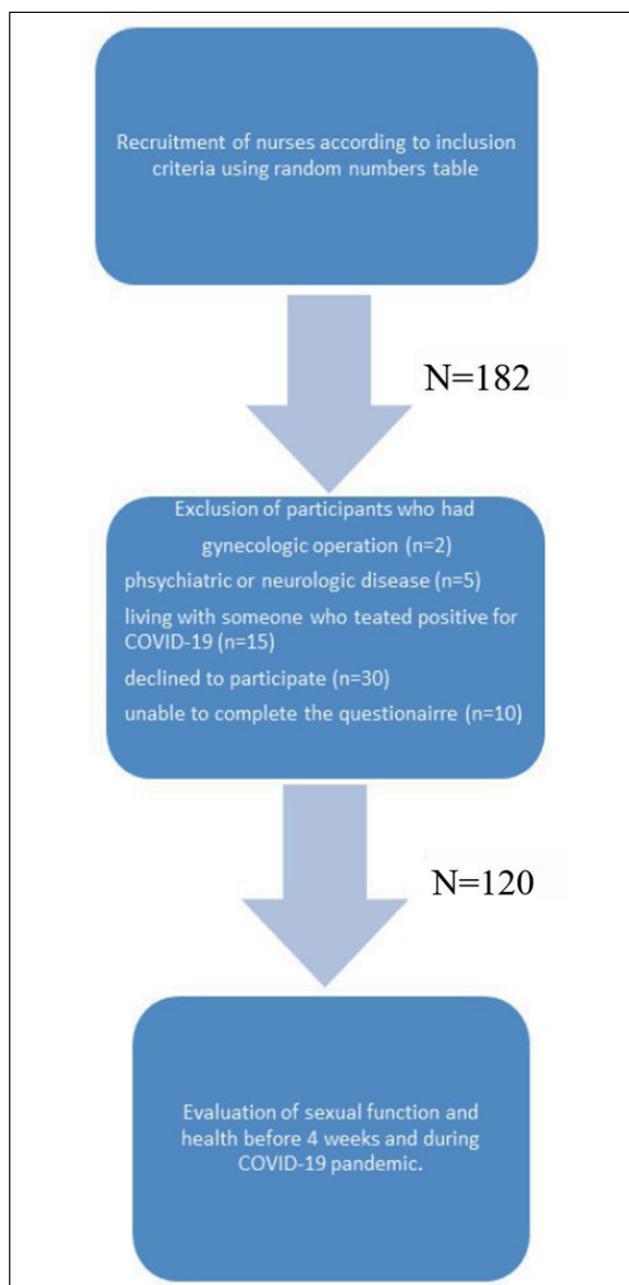
	Before the pandemic	During the pandemic	p value
Frequency of sexual intercourse each month	7.20±4.86	6.63±4.90	<b>0.010</b>
Contraception use	106 (88.30%)	108 (90%)	0.500
Desire to become pregnant	11 (9.10%)	13 (10.80%)	0.720
Menstrual disorder	1 (0.80%)	2 (1.60%)	1
Vaginal infection	4 (3.30%)	4 (3.30%)	1

Plus-minus values are mean ± standard deviation SD: standard deviation.

**Table 3.** Comparison of participants' FSFI scores before the pandemic and during the COVID-19 pandemic

Domains of FSFI	Before the pandemic	During the pandemic	p value
Desire	3.37±1.02	2.86±1.02	<0.001
Arousal	3.88±1.14	3.35±1.11	<0.001
Lubrication	4.53±1.15	4.41±1.06	<0.001
Orgasm	4.30±1.20	3.98±1.15	<0.001
Satisfaction	4.07±0.88	3.70±0.98	<0.001
Pain	4.69±1.36	4.86±1.26	0.010
Total FSFI score	24.85±5.19	23.19±4.96	<0.001

Plus-minus values are mean ± standard deviation SD: standard deviation, FSFI: Female Sexual Function Index.

**Figure 2.** Changes in FSFI domains and total FSFI scores of participants.

and satisfaction ( $p<0.001$ ). The pain score was significantly higher during the pandemic ( $p=0.01$ ), as described in Table 3 and Fig. 2.

## Discussion

The COVID-19 outbreak affected the lives of many individuals, especially healthcare workers, in many ways, including their sexual life. According to our study results, contraception use and desire to become pregnant among nurses did not differ between periods; pre-pandemic and during the pandemic. However, the frequency of sexual intercourse monthly and all domains of FSFI score, including; sexual desire, arousal, lubrication, orgasm, and satisfaction, significantly decreased during the pandemic ( $p<0.05$ ).

According to a survey of non-healthcare workers, both pregnancy desire and contraceptive use declined dramatically during the pandemic<sup>12</sup>. It was suggested that difficulties accessing the health system for pregnancy care affected women's pregnancy intention, and the unavailability of contraceptive methods decreased their use during the pandemic. Similarly, an Italian study reported 37.3% of participants who desired pregnancy before the pandemic abandoned that intention due to concerns about economic difficulties and pregnancy outcomes<sup>13</sup>. Another survey from Shangai revealed that approximately one-third of participants canceled their pregnancy plans due to fears of healthcare services<sup>14</sup>. In this study, we did not see the effect of pandemics on pregnancy desire. This may be because healthcare professionals have greater access to contraception and prenatal care than the general public. Additionally, the percentage of nurses who already desired pregnancy before the pandemic was low in our sample.

Although it is believed that the stress on women caused by the pandemic may affect menstrual disorders<sup>15</sup>, similar to our result, a questionnaire-based cross-sectional study of 200 women found no difference in the incidence of menstrual disorders compared to before the pandemic<sup>12</sup>. Dysmenorrhea has been reported to improve with increasing age and parity; therefore, the median age of our study population may affect the findings<sup>16</sup>. Furthermore, the analysis relied on data obtained via the questionnaire only; menstrual history and a medical examination were not performed.

Considering the inevitable increase in stress and anxiety of front-line nurses, an association between anticipated depression and diminished sexual appetite is not surprising. While a study by Mathew et al. on depressed people revealed perplexing findings such as 23% of men reporting an increase in sexual interest during the depression period, it also said that women appeared to exhibit decreased sexual interest more during the depression period, with just 9% reporting an increase in sexual interest compared to 35% reporting a substantial decrease in sexual interest<sup>17</sup>. Furthermore, some studies supported these mixed findings. Yuksel et al. found that although the total FSFI score was significantly lower, the frequency of sexual intercourse, sexual desire, and lubrication increased during the pandemic.<sup>12</sup> Nevertheless, our results are in line with most previous studies conducted to investigate the sexual health of females during the pandemic<sup>18,19</sup>. Cocci et al. reported that 53.3% of the participants expressed less satisfaction in sexual relations than in the pre-pandemic period<sup>20</sup>. Similarly, Li et al., whose study included a large sample, reported that 22% of participants had reduced sexual desire, and 41% experienced a decline in the frequency of sexual intercourse<sup>21</sup>. As revealed, nurses who suffered more severe depression and anxiety symptoms during the pandemic also experienced sleep disturbances due to heavy work hours<sup>22</sup>. Because of the increased time spent working at hospitals during the pandemic, nurses have limited time with their partners. In addition to lack of time, the desire to prevent contaminating their partner with COVID-19 might affect their hesitation to engage in intimacy. When these factors are added to the stress and sleep disturbances, nurses' overall FSFI scores and scores in five domains (all but pain) decreased during the pandemic.

One of the limitations of our study is that remembering the period before the pandemic might have been difficult for participants. Although the sample size

was sufficient according to our analysis, larger, multi-country studies would shed more light on the issue and be more generalizable. However, we believe that conducting the research at two separate tertiary centers increased the power of our study. To our knowledge, the study was one of the first studies to investigate the effects of COVID-19 on the sexual behavior of nurses.

In conclusion, the frequency of sexual intercourse monthly, sexual desire, arousal, lubrication, orgasm, satisfaction, and total FSFI score of nurses significantly decreased during the pandemic compared to the pre-pandemic period, whereas only the pain score increased. Thus, we concluded that the sexual function scores of nurses have deteriorated during the COVID-19 process. Prospective studies should further examine the biological, psychological, and sexual behavioral effects of the COVID-19 outbreak on nurses struggling on the front line. Such studies can raise awareness and help apply early and adequate support policies to protect nurses from these adverse aspects of the pandemic and help them better handle its effects.

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