

The relationship between sexual behavior and well-being during the COVID-19 pandemic: an online survey study

COVID-19 pandemisinde cinsel davranış ve iyi oluş arasındaki ilişki: çevrimiçi bir anket çalışması

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Abstract

Purpose: In addition to its psychologically and socially negative effects on society, the COVID-19 pandemic has affected the sexual behavior of individuals. This study investigated the relationship between changes in sexual drive and well-being during the COVID-19 pandemic period.

Materials and methods: The data of this cross-sectional study were collected using a web-based survey between May 12 and August 12, 2021, with the voluntary participation of 231 individuals. The survey form included questions on sociodemographic and health-related characteristics, employment status, sex life before and during the COVID-19 pandemic period and status of having a partner, and COVID-19 diagnostic status, in addition to the Short Warwick-Edinburgh Mental Well-Being Scale.

Results: A reduction in sexual drive in the pandemic period was reported by 71 (30.7%) participants. The group whose sexual drive decreased had significant differences in terms of age, marital status, the status of having children, and Warwick-Edinburgh scale scores compared to the groups whose sexual drive increased or remained unchanged (respectively, $p=0.009$, $p=0.039$, $p=0.041$, and $p<0.001$). According to the logistic regression model, for every one-year increase in age corresponded to 8% (95% CI: 3-12%) increase in the risk of reduced sexual drive ($p=0.001$), and a 1-unit increase in Warwick-Edinburgh scale scores corresponded to a 16% (95% CI: 10-22%) decrease ($p<0.001$).

Conclusion: The COVID-19 pandemic affected the sexual drives and behavior of the participants. Increased age and lower mental well-being levels were associated with lower sexual drive. Programs aimed at improving mental well-being will have a beneficial effect on sexual behavior.

Key words: Sexual behavior, COVID-19 pandemic, mental health, sexual activity.

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Öz

Amaç: COVID-19 pandemisi toplum üzerindeki psikolojik ve sosyal açıdan olumsuz etkilerinin yanı sıra bireylerin cinsel davranışlarını da etkilemiştir. Bu çalışma, COVID-19 pandemi döneminde cinsel dürtü değişiklikleri ile iyilik hali arasındaki ilişkiyi araştırmayı amaçlamıştır.

Gereç ve yöntem: Kesitsel tipteki bu çalışmanın verileri, 231 kişinin gönüllü katılımıyla 12 Mayıs-12 Ağustos 2021 tarihleri arasında web tabanlı bir anket formu kullanılarak toplanmıştır. Anket formunda Kısa Warwick-Edinburgh Mental iyilik ölçeğine ek olarak sosyodemografik ve sağlıkla ilgili özellikler, istihdam durumu, COVID-19 pandemi öncesi ve pandemi dönemindeki cinsel yaşam ve eş sahibi olma durumu ve COVID-19 tanı durumu ile ilgili sorular yer almıştır.

Bulgular: Katılımcıların 71'i (%30,7) tarafından pandemi döneminde cinsel istekte azalma olduğu bildirilmiştir. Cinsel dürtü azalan grup, cinsel dürtüsü artan veya değişmeyen gruplara göre yaş, medeni durum, çocuk sahibi olma durumu ve Warwick-Edinburgh ölçeği puanları açısından anlamlı farklılık gösterdi (sırasıyla, $p=0,009$, $p=0,039$, $p=0,041$ ve $p<0,001$). Lojistik regresyon modeline göre, yaştaki her 1 yıllık artış, cinsel dürtü azalma riski %8 (%95 GA: %3-12) artışı sağlarken ($p=0,001$) Warwick-Edinburgh ölçeği puanlarındaki 1 birimlik artış %16'lık (%95 GA: %10-22) azalmaya neden oluyordu ($p<0,001$).

Sonuç: COVID-19 pandemisi katılımcıların cinsel dürtülerini ve davranışlarını etkilemiştir. Artan yaş ve düşük zihinsel refah seviyeleri, daha düşük cinsel dürtü ile ilişkilendirildi. Zihinsel sağlığı iyileştirmeyi amaçlayan programlar, cinsel davranış üzerinde faydalı bir etkiye sahip olacaktır.

Anahtar kelimeler: Cinsel davranış, COVID-19 pandemisi, ruh sağlığı, cinsel aktivite.

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Introduction

After the identification of more than 118,000 cases in 114 countries by 11.03.2020, the novel coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization (WHO) [1]. The COVID-19 pandemic has had negative psychological and social effects on societies. Its psychological effects have included not only fear of infection but also increased levels of anxiety and depression symptoms. Social distancing measures have reduced interpersonal communication and interactions and had negative effects on empathetic processes. These issues also have negative effects on the psychological well-being of individuals [2].

WHO defines sexual health not only as of the absence of a disease, dysfunction, or disability, but also a complete state of emotional, physical, mental, and social well-being related to sexuality [3]. In addition to reducing physical contact between partners from kissing to sexual intercourse due to fears of infection, COVID-19 leads to arguments and differences of opinion between partners who have to spend 24 h of the day together and negatively affects their sex lives [4]. The negative psychological effects of depression and anxiety symptoms developing due to the pandemic reduce sexual interest and intercourse frequency between partners [5, 6]. While some publications have shown lower frequencies of sexual intercourse in the COVID-19 pandemic period [7, 8], others have shown higher frequencies [9, 10].

Different results have been obtained about changes in sexual intercourse frequency in the COVID-19 pandemic period in the literature. In this study, it was aimed to reveal the effects of the COVID-19 pandemic on the sexual drives of individuals and investigate the relationships of these results to mental well-being and other factors.

Materials and methods

Population

The sample of the study consisted of individuals over the age of 18 living in Türkiye. The inclusion criteria were determined as

being over 18 years old, being male or female, and being sexually active heterosexual or homosexual individuals. Individuals who did not agree to participate in the study or did not completely fill out the survey form were excluded. Before they started to fill out the survey, all participants consented to participate in the study and provided permission for their data to be used. The sample size required for the study was calculated using the OpenEpi [11] program and the formula: $n = \frac{DEFF * Np(1-p)}{[(d^2 / Z^2_{1-\alpha/2}) * (N-1) + p * (1-p)]}$. The minimum required sample size for the study was calculated as 164 participants based on prevalence (reduced sexual drive) of 46.45% (P) [7], in an 80% confidence level, with a 5% error margin, and by taking the design effect as one.

Data collection

The data were collected between May 12 and August 12, 2021 on the Survey Monkey platform. Messages including the invitation to participate in the study and information about the study were sent to the phones of members of professional associations through electronic messaging platforms (WhatsApp). These individuals also shared the link to the survey with other individuals. Participation in the study was voluntary, and before starting to collect data, the participants were provided with an informed consent form to confirm. No monetary or non-monetary incentives were offered to the participants for their participation. The online survey form was open-access, and IP addresses were checked to identify potential duplicate responses. There were 4 duplicate IP addresses. As it was determined that data of different individuals were entered from these addresses, these data were not removed from the dataset. As the settings on the system where the survey was implemented (Survey Monkey) were made to ensure that uncompleted or incompletely filled survey forms would not be transferred to the database, no participants were excluded after the data were collected.

Survey form

The survey form consisted of questions on the sociodemographic and health-related characteristics of the participants (12 items),

questions on their employment status (3 items), questions on their sex lives before and in the pandemic period and their status of relationship with their partner (4 items), questions on their history of COVID-19 infection (2 items), and the Short Warwick-Edinburgh Mental Well-Being Scale (7 items).

The Short Warwick-Edinburgh Mental Well-Being Scale was tested for validity and reliability in Turkish by Demirtas and Baytemir [12] in 2019. It is a 5-point Likert-type scale (1= None of the Time, 5= All of the Time) consisting of 7 items in the form of positive statements. Higher scores indicate higher levels of mental well-being. The Cronbach's alpha coefficient of the scale was determined as 0.86, while its goodness-of-fit indices were found as χ^2/df : 1.58, RMSEA: 0.065, CFI:0.99, and NFI: 0.97. Permission to use the scale in our study was obtained from Demirtas and Baytemir on 19.04.2021.

Statistical analysis

In the reporting of the descriptive statistics, the continuous data are presented as mean, standard deviation, median, minimum, and maximum values, and the categorical data are presented as frequencies and percentages. Chi-squared test was conducted to investigate the relationships between the categorical variables. Binary logistic regression analysis was carried out for the multivariate analysis of factors associated with reduced sexual drive. Variables that had values of $p < 0.200$ in the univariate analyses were included in the logistic regression model, and the ideal model was obtained using the backward method. For all statistical analyses, the level of statistical significance was taken as $p < 0.05$. All data were analyzed using the Statistical Package for the Social Sciences (SPSS, Version 23.0).

Approval for conducting the study was obtained from the Noninterventional Studies Ethics Committee of Buca Seyfi Demirsoy Research and Training Hospital (Decision Date: 28.04.2021, Decision Number: 2021/4-41). Data were collected in accordance with the declaration of Helsinki.

Results

Among the 231 individuals who participated in the study, 135 (58.4%) were women, and

96 (41.6%) were men. The mean age of the participants was 45.0 ± 9.2 (min: 22, max: 71) years, and their mean BMI was 25.4 ± 4.0 (min:17.1, max: 37.6) kg/m^2 . It was found that 175 (75.8%) of the participants were married or marriage lite. The sociodemographic characteristics of the participants are summarized in Table 1.

While 181 (78.4%) of the participants were working at any job, 23 (10.0%) were retired, 16 (6.9%) were homemakers, 6 (2.6%) were unemployed, and 5 (2.2%) were students. The ratio of the participants who worked 8 hours or longer per day was 124 (53.7%). It was found that 110 (47.6%) of the participants had a monthly income of 9,000 TL or higher, 102 (44.2%) had a monthly income of 3,000-8,999 TL, and 19 (8.2%) had a monthly income of 2,999 TL or lower.

It was determined that 46 (19.9%) of the participants had at least one chronic disease. When they were asked about their COVID-19 infection history, 29 (12.6%) of the participants stated that they had been diagnosed with COVID-19, and among those who had been diagnosed, 2 received treatment in intensive care, whereas one received treatment as an inpatient. The rates of the participants who were smokers and those who consumed alcohol were respectively 75 (32.5%) and 116 (50.2%).

Most participants shared the same home with their partners ($n:168$ (72.7%)). The information about the participants regarding the time they spent with their partners and changes in their sexual drive in the pandemic period is presented in Table 2. The mean Short Warwick-Edinburgh Mental Well-Being Scale score of the participants was found as 26.3 ± 4.7 .

It was determined that the participants whose sexual drive levels decreased during the pandemic period had a significantly higher mean age than the participants whose sexual drive levels increased or remained unchanged ($p=0.009$). The degree of decrease in the sexual drive levels of the participants who were married/marriage lite was significantly higher than the degree of decrease among others ($p=0.039$). The participants who had children also experienced a significantly higher degree of decrease in their sexual drive levels compared to others ($p=0.041$). The participants whose

Table 1. Sociodemographic characteristics of the participants

Variables	n	%
Marital Status		
Unmarried	28	12.1
Married/Marriage lite	175	75.8
Separated/Divorced/Widowed	26	11.2
Does not want to specify	2	0.9
Educational Status		
Primary school	3	1.3
Secondary school or high school	22	9.5
University	107	46.3
Master/Doctorate	99	42.9
Duration of Relationship		
None	23	10.0
5 years or shorter	35	15.1
6 years or longer	173	74.9
Has Children		
Yes	179	77.5
1 child	93	40.3
2 children	76	32.9
3 or more children	10	4.3
No	52	22.5
Living		
With partner/children	177	76.6
With parents	18	7.8
Alone	30	13.0
With roommate(s)	6	2.6

Table 2. Living and sexual drive statuses of the participants in the pandemic period

Variables	n	(%)
Shares the same home with partner		
No	63	27.3
Yes	168	72.7
Shares the same home partner in the pandemic		
Yes	168	72.7
No	50	21.7
Sometimes	13	5.6
Time spent in the same environment with partner		
0 h	21	9.1
1–6 hours	74	32.0
7–12 hours	56	24.2
13–18 hours	32	13.9
19–24 hours	48	20.8
Sexual drive in the pandemic		
Decreased	71	30.7
Unchanged	130	56.3
Increased	30	13.0

sexual drive levels decreased in the pandemic period had a significantly lower mean Warwick-Edinburgh score than those whose sexual drive increased or remained unchanged ($p<0.001$) (Table 3).

According to the logistic regression model of the factors affecting the sexual drive reduction

status of the participants, a 1-year increase in age corresponded to a 1.08 (95% CI: 1.03-1.12) increase in the risk of reduced sexual drive ($p=0.001$), and a 1-unit increase in Warwick-Edinburgh scale scores corresponded to a 16% (95% CI: 10-22%) decrease ($p<0.001$) (Table 4).

Table 3. Relationship between the sociodemographic and some other characteristics of the participants and changes in their sexual drive during the pandemic period

Variables	Unchanged and Increased (n: 160)	Decreased (n: 71)	<i>p</i>
Age, Mean±SD	44.0±9.5	47.4±8.0	0.009*
Sex, n (%)			
Female	89 (65.9)	46 (34.1)	0.192 [†]
Male	71 (74.0)	25 (26.0)	
BMI, Mean±SD	25.3±4.0	25.7±4.0	0.431 [†]
Marital Status, n (%)			
Married/Marriage lite	115 (65.7)	60 (34.3)	0.039[†]
Unmarried/No Marriage lite	45 (80.4)	11 (19.6)	
Has Children, n (%)			
No	42 (80.8)	10 (19.2)	0.041[†]
Yes	118 (65.9)	61 (34.1)	
Relationship Duration, n (%)			
None	20 (87.0)	3 (13.0)	0.151 [†]
Shorter than 5 years	24 (68.6)	11 (31.4)	
6 years or longer	116 (67.1)	57 (32.9)	
Living Status, n (%)			
Living with partner/children	116 (65.5)	61 (34.5)	0.080 [†]
Living with parents/roommate(s)	19 (79.2)	5 (20.8)	
Living alone	25 (83.3)	5 (16.7)	
Educational Status, n (%)			
High school or lower	20 (80.0)	5 (20.0)	0.218 [†]
University or higher	140 (68.0)	66 (32.0)	
Monthly Income, n (%)			
0-2,999 TL	13 (68.4)	6 (31.6)	0.993 [†]
3,000-8,999 TL	71 (69.6)	31 (30.4)	
9,000 TL or higher	76 (69.1)	34 (30.9)	
Working hours per day, n (%)			
7 h or less	73 (68.2)	34 (31.8)	0.750 [†]
8 h or more	87 (70.2)	37 (29.8)	
Has a chronic disease, n (%)			
No	131 (70.8)	54 (29.2)	0.307 [†]
Yes	29 (63.0)	17 (37.0)	

Table 3. Relationship between the sociodemographic and some other characteristics of the participants and changes in their sexual drive during the pandemic period (continued)

Variables	Unchanged and Increased (n: 160)	Decreased (n: 71)	p
Smoker, n (%)			
No	107 (68.6)	49 (31.4)	0.749 [†]
Yes	53 (70.7)	22 (29.3)	
Consumes alcohol, n (%)			
No	80 (69.6)	35 (30.4)	0.921 [†]
Yes	80 (69.0)	36 (31.0)	
Stays in the same home with partner in the pandemic, n (%)			
Yes	112 (66.7)	56 (33.3)	0.139 [†]
No	36 (72.0)	14 (28.0)	
Sometimes	12 (92.3)	1 (7.7)	
Shares the same home with partner, n (%)			
No	48 (76.2)	15 (23.8)	0.162 [†]
Yes	112(66.7)	56 (33.3)	
Time spent in the same environment with partner per day, n (%)			
12 h or less	105 (69.5)	46 (30.5)	0.902 [†]
13–24 hours	55 (68.8)	25 (31.3)	
Has been diagnosed with COVID-19, n (%)			
No	137 (67.8)	65 (32.2)	0.210 [†]
Yes	23 (79.3)	6 (20.7)	
Warwick Edinburgh Skor, Mean±SD	27.2±4.7	24.3±4.0	<0.001*

* Student T test, † Chi-squared test

Table 4. Logistic regression model of the factors affecting the sexual drive reduction status of the participants in the pandemic period

	B	S.E.	Wald	p	OR	95% C.I. for OR	
						Lower	Upper
Age	0.073	0.02	13.01	0.001 [‡]	1.08	1.03	1.12
No marriage/marriage lite (ref.: marriage/marriage lite)	-1.393	0.789	3.115	0.078 [‡]	0.25	0.05	1.17
Shares home with partner (ref.: yes)							
No	1.001	0.769	1.691	0.193 [‡]	2.72	0.60	12.26
Sometimes	-2.159	1.149	3.531	0.060 [‡]	0.12	0.01	1.10
Warwick-Edinburgh Score	-0.175	0.037	21.777	<0.001 [‡]	0.84	0.78	0.90
Constant	0.492	1.108	0.198	0.657	1.64		

Nagelkerke R²=0.238, ‡: Binary logistic regression analysis

Discussion

The COVID-19 pandemic, which has been going since the end of 2019, has led to social and economic difficulties in many countries including Türkiye [13]. In Türkiye, the government has occasionally issued complete and partial closures (workplaces, schools, movie theaters, and other social activities), and “social distancing” has been going on in daily life [14]. This situation has led to essential changes in the lives of individuals and affected their quality of life and well-being negatively [15, 16]. Previous studies have determined that the social measures and restrictions caused by the COVID-19 pandemic [17], experiencing financial concerns [7], and increased depression, anxiety and negative mood levels [6, 18] have a transformative effect on the sexual behavior of individuals.

While more than half of the participants in our study (56.3%) reported that their sexual drive levels did not change, 30.7% stated that their sexual drive decreased. The reason for this result may be the fact that our study was conducted in a relatively late period of the pandemic, where the period of uncertainty (e.g., lack of a vaccine, lack of specific treatments) had been put behind, and we were closer to a normal life. Additionally, the high education and income levels of the participants may have made it easier for them to manage stressful situations experienced in the pandemic period (e.g., financial difficulties, infodemic) and prevented these issues from being reflected in their sex lives. The results of studies conducted on sex life throughout the COVID-19 pandemic period have shown differences, including reports of decreases and increases [19]. In most studies conducted in different societies in different countries, reductions have been observed in “sexual function,” “sexual desire,” “sexual intercourse,” and “sexual satisfaction” levels [20-22]. Feng et al. [8] reported that the frequency of sexual intercourse decreased by 43.3% in the period of restrictions, while sexual desire, satisfaction, and quality of sex remained unchanged in most participants. As reasons for lowered levels of sexual behavior, fear of infection, fear of disease-related death, concerns created by news stories about deaths and disease that are constantly on the

global agenda, job termination and financial unpredictability, and intense exposure to external stressors such as social isolation and loneliness may have influenced the romantic relationships of individuals and their interest in sex [4]. Mumm et al. [17] reported that sexual intercourse frequency and sexual satisfaction during intercourse increased in Germany, Micelli et al. [23] reported increased levels of desire to become parents among Italian individuals, especially women, and Yuksel et al. [9] observed similarly that sexual intercourse frequency and sexual desire increased. Among studies conducted in Türkiye, Karagoz et al. [24] reported that sexual intercourse frequency decreased, but sexual function levels increased in both sexes among those who spent more time together, Baran et al. [25] found that the number of sexual intercourse per week among their participants, which was 2.34 ± 1.35 in the pre-pandemic period dropped to 1.54 ± 1.45 in the pandemic period, and Kaya et al. [26] determined lower frequencies of sexual intercourse and reduced sexual satisfaction among women who were diagnosed with COVID-19. The varying effects of the COVID-19 pandemic on each country (e.g., treatment opportunities, spread of the virus, mortality and morbidity rates), differences in quarantine practices in countries, and differences in terms of sex life in different societies may explain the different results reported in these studies [17]. Perspectives on sexuality in different cultures show great variations depending on history regarding views on sexuality, the importance of sexuality, and sexual orientation [27]. In our study, it was found that as the ages of the participants increased, their sexual drive decreased. Similarly, Karsiyakali et al. [28] identified lower sexual desire levels among individuals at a higher mean age. Aging brings about physiological, behavioral, and psychosocial changes, and all these changes affect sexual function [29]. COVID-19 progresses more severely and deadlier in the elderly population, while social restriction measures in Türkiye were stricter for older individuals in Türkiye, and these reasons may have increased the pressure on older individuals and led them to experience a loss of sexual drive [30].

Mental well-being, which represents the positive aspect of mental health, is closely

related to the physical and social well-being of individuals, and individuals with a positive state of well-being usually possess the resources and skills that are required for coping with problematic situations [12]. Studies have reported that the catastrophic environment experienced throughout the COVID-19 pandemic period has reduced the mental well-being of individuals [15, 16, 23]. Cito et al. [7] observed a decrease in the frequency of sexual intercourse in the quarantine period, while they also identified a positive correlation between well-being scores and sexual intercourse frequency. Likewise, in our study, the participants whose sexual drives decreased had lower scores in the Short Warwick-Edinburgh Mental Well-Being Scale.

Strengths and limitations

Our study is one of the first studies that have presented the relationship between mental well-being and sexual drive during the COVID-19 pandemic in Türkiye. Unfortunately, our sample size does not represent the entire Türkiye. It was a limitation that we used questions that we prepared by reviewing the literature because no specific, validated survey was available regarding the effects of quarantine on sexuality. The fact that the participants of this study included only those who had access to online platforms was another limitation.

To sum the stressful situations created by the COVID-19 pandemic has inevitably affected humanity as a whole. It has not been easy for everyone to accept and manage the necessary changes it has brought, and in this period, the sexual drives of individuals toward their partners and their sexual behavior have been affected. In this study, it was determined that older age, being married/marriage lite, and having children were related to reduced sexual drive. Low mental well-being scale scores were also associated with reduced sexual drive. Sex is a part of people's lives. By considering the psychological pressure brought about by the COVID-19 pandemic, researchers should design effective programs to improve the sexual behavior of people.

Conflict of interest: No conflict of interest was declared by the authors

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Authors' contributions to the article

Z.S. have constructed/constructed the main idea and hypothesis of the study. Z.S., H.G., C.B., S.P.Y. developed the theory and arranged/edited the material and method section. Z.S., H.G, P.A. collected data. Z.S., C.B., S.P.Y. have done the evaluation of the data in the Results section. All authors conducted a literature review. Discussion section of the article written by all authors reviewed, corrected and approved. In addition, all authors discussed the entire study and approved the final version.