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Pandemi Döneminde Cerrahi Kliniklerde Çalışan Hemşirelerin Algılanan COVID-19 Riski, Stres Düzeyleri ve Bakım Davranışlarının İncelenmesi

Investigation of Perceived COVID-19 Risk, Stress Levels, and Care Behaviours of Nurses' Working in Surgical Clinics During the Pandemic Period

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ÖZ

Giriş: Bu çalışma, pandeminin ikinci yılında cerrahi hemşirelerinin stres, COVID -19 risk algısı ve bakım davranışları arasındaki ilişkiyi belirlemek amacıyla yapıldı.

Yöntem: Tanımlayıcı ve kesitsel tasarıma sahip bu araştırma, bir eğitim araştırma hastanesindeki 230 hemşirenin katılımı ile gerçekleştirildi. Veriler; Kişisel Bilgi Formu, Algılanan COVID -19 Risk ölçeği, Hemşire Stres Ölçeği ve Bakım Davranışları Ölçeği-30 kullanılarak toplandı. Çalışmanın istatistiksel analizinde IBM SPSS Statistics 22 programı kullanıldı.

Bulgular: Pandeminin ikinci yılında hemşirelerin stres, COVID -19 risk algısı ve bakım davranışları ortalamanın üzerinde yüksek düzeyde bulundu. Hemşirelerin stres düzeyleri ile COVID -19 risk algıları arasında, bakım davranışları ile de COVID-19 riski algısı arasında pozitif yönde anlamlı bir ilişki olduğu belirlendi.

Sonuç: Bulgular, yoğun bakım ve pandemi kliniklerinde çalışan hemşirelerin, özellikle daha önce COVID-19'a yakalanmış ve virüs hakkında yeterli bilgiye sahip olanların, daha yüksek bakım davranışları sergilediğini göstermiştir. Ayrıca, hemşirelerin COVID -19 risk algısı ve stres düzeylerinin yükseldikçe bakım davranışlarının da arttığı görüldü.

Anahtar Kelimeler: bakım davranışları, cerrahi hemşireleri, COVID-19 risk algısı, stres.

ABSTRACT

Objective: This study aimed to determine the relationship between Stress, COVID-19 risk perception, and care behaviours of surgical nurses during the second year of the pandemic.

Method: This descriptive and cross-sectional study was conducted with 230 nurses in a training and research hospital. The data were collected using the Personal Information Form, Perceived COVID -19 Risk Scale, Nurse Stress Scale, and Caring Behaviours Scale-30 IBM SPSS Statistics 22 program was used for the study's statistical analysis.

Results: In the second year of the pandemic, nurses' Stress, COVID -19 risk perception, and care behaviours were higher than the average. It was determined that there was a significant positive correlation between nurses' stress levels and COVİD-19 risk perceptions and between care behaviours and COVİD-19 risk perceptions.

Conclusion: The findings indicated that nurses working in intensive care and pandemic clinics, especially those who had previously contracted COVID-19 and possessed sufficient knowledge about the virus, exhibited higher care behaviors. In addition, as nurses' COVID-19 risk perception and stress levels increased, their care behaviours also increased.

Keywords: care behaviours, surgical nurses, COVID-19 risk perception, stress.

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INTRODUCTION

The COVID-19 pandemic has significantly affected the nursing workforce worldwide (1). During the COVID-19 pandemic, nurses reported increased workload (2) and infection risk (3), along with many negative psychological effects such as burnout, depression, anxiety, stress, sleep disorders, and fear (4). Nurses' stress levels have increased during the COVID-19 pandemic, primarily due to the lack of experience, staff, and resources in intensive care units (5-9). Surgical nurses face unique challenges during the pandemic, including lack of guidelines, difficulty in maintaining social distancing, exhausting work conditions, burnout, and inadequate support (10).

Nurses consider various factors during COVID-19, such as professional knowledge, emotional intelligence, cultural competencies, resources, organizational culture, experience, personal characteristics, roles, and beliefs (11). COVID-19 risk perception, which denotes how individuals perceive COVID-19 as a significant threat (12), is influenced by factors related to individuals, psychology, and sources of information (13). Nurses' risk perceptions during the COVID-19 pandemic revolve around three core themes: concerns about workplace and service delivery, anxieties about their and their families' health, and the needs of patients (14).

Numerous studies have established a connection between risk perception and psychological well-being among healthcare professionals. Simione and Gnagnarella (2020) emphasized that healthcare workers tend to have a higher risk perception than society, and an increased perceived risk is correlated with heightened stress (15). Yamane et al.'s (2022) year-long investigation of healthcare personnel during the initial year of the pandemic revealed that despite a reduction in concerns about transmitting the virus, a substantial proportion of workers continued to experience heightened workplace stress and contemplation of resignation (16). While risk perception diminished over time, stress levels remained elevated despite higher vaccination rates. Individuals exposed to more COVID-19 cases were more likely to report burnout and post-traumatic stress.

Identifying and understanding the factors associated with nurses' care behaviors during the pandemic will help determine the necessary measures and improvements in emergency public health situations and improve the quality of care and patient satisfaction. Despite the increase in studies examining the care experiences of nurses in the acute phase of the pandemic, the long-term effects of the pandemic on nurses still need to be fully understood. For future pandemics, more evidence is required regarding the long-term consequences of the pandemic and the recovery process. This study aimed to investigate the relationship between stress levels, COVID-19 risk perceptions, and care behaviors of nurses in surgical clinics during the second year of the pandemic.

MATERIALS AND METHODS

This descriptive, cross-sectional, correlational study investigated the relationship between stress levels, perceived COVID-19 risk, and care behaviors among nurses working in surgical clinics during the pandemic.

Participants

The study population consisted of 250 nurses working in the surgical units of the Istanbul Health Sciences University Bağcılar Training and Research Hospital. The sample size calculation was aimed at reaching 230 nurses using the G-power method with an effect size value of 0.05 and 80% power. The study involved 230 nurses employed at the Health Sciences University of Istanbul Bagcılar Training and Research Hospital Surgical Units. The inclusion criteria were working in a surgical clinic for at least one year. At the same time, 20 nurses under quarantine due to COVID-19 reporting and on leave were excluded from the study. The interviews were conducted face-to-face during working hours during a convenient period, as determined by the nurses. The Kocaeli University Non-Interventional Clinical Research Ethics Committee approved the research under decision number KOÜ GOKAEK-2021/23.26 dated 30/12/2021. Permission (2022-01-07T14_41_50) was obtained from the COVID-19 Scientific Research Platform. The study adhered to the principles of the Declaration of Helsinki, and each participant provided voluntary consent.

Measurements

Perceived COVID-19 Risk Scale The Perceived COVID-19 Risk Scale (PCRS) is an 8-item scale adapted from the 8-item SARS Risk Perception Scale by Yıldırım and Güler (17). The scale measures the perceived risk of contracting COVID-19 on a 5-point Likert-type scale, with 1 being a remote possibility and 5 being a great possibility. The scale consists of two subscales: the cognitive dimension of personal risk, which measures the perceived likelihood of contracting COVID-19, and the affective dimension of personal risk, which measures the emotional response to the perceived risk of contracting COVID-19. The total score ranged from 8 to 40, with higher scores indicating a higher perceived risk of contracting COVID-19. In this study, the Cronbach's alpha for the PCRS was 0.80.

Nursing Stress Scale: Mert et al. (2021) conducted a validity and reliability study of the Nursing Stress Scale (NSS) (18) developed by Gray-Toft and Anderson (1981) to measure stress levels in nurses (19). The NSS consists of 34 items and seven workloads: death of a patient, conflict with other nurses, insufficient support, and suffering patients. Each item is rated on a 4-point Likert scale. The total score ranges from 34 to 136, with higher scores indicating more frequent stress periods and lower scores indicating less stress. In this study, Cronbach's alpha for the NSS was 0.921.

Caring Behaviours Scale-30: The Caring Behaviors Scale (CBS-30) was first developed by Zane Robinson Wolf et al. (1994) to measure patients' ethical and philosophical dimensions (20). The original scale consists of 42 items and five sub-dimensions. Gül and Dinç (2020) adapted the scale for perceptions of nurses and patients regarding the concept of care in the Turkish context, resulting in a 30-item scale with three sub-dimensions: Respect for Others, Professional Knowledge and Attitude, and Being Accessible for the Individual. Participants rated each item on a 6-point Likert-type scale, ranging from (1) never to 6 (always) (21). The total score on the scale ranges from 30 to 180. This study determined the Cronbach's alpha value for the CBS-30 as 0.976.

Statistical Analysis

The data collected in this study were analyzed using the Statistical Package for Social Sciences (SPSS, version 22). Number, percentage, and

average criteria were used to evaluate the data. The Kolmogorov–Smirnov test was used to assess data normality. The Mann-Whitney U, ANOVA, and Kruskal-Wallis tests were used to calculate the sample characteristics' standard deviations and frequencies and analyze the differences. Bonferroni and Tamhane's tests determined which group the differences originated from. Pearson's correlation analysis was applied to normally distributed data to assess the relationship between continuous variables. Statistical significance was defined as $p < 0.05$.

RESULTS

This section of the study provides statistical results on nurses' Stress, COVID-19 Risk Perception, and Care Behaviours during the COVID-19 process.

Table 1 shows the distribution of participants' demographic, occupational, and pandemic-related characteristics. The study found that most nurses were 25-30 years old (47%), female (78.7%), single (67%), undergraduate (72.2%), and had chronic diseases (16.1%).

When the variables related to the profession and the pandemic process of the nurses were examined, it was found that the majority (85.7%) worked in shifts, 67.4% worked in the COVID-19 clinic, 161 (70%) worked between 40 and 60 hours per week, 33% described the working environment as a medium during the pandemic, and 109 (47.4%) wanted to leave their job. One in every two nurses experienced a change in their clinics because of the pandemic. In this process, 151 (65.7%) participants reported that they had COVID-19, 55% (23.9%) reported that there were people infected with COVID-19 around them, and 112 (48.7%) reported that they experienced death among their relatives due to COVID-19. More than half (59.1%) had moderate knowledge of COVID-19 diagnosis, transmission, and treatment.

Table 2 shows the statistically significant differences between the groups in the PCRS, NSS, and CBS-30 scales ($p<0.05$). Female nurses, nurses who changed their location, and nurses who worked in COVID-19 clinics experienced higher levels of COVID-19 fear and lower NSS scores. Women, those with chronic illnesses, those who left their jobs, and those who experienced death around them experienced more stress. Nurses who worked in COVID-19 clinics and those with COVID-19 demonstrated higher care behaviors.

Table 3 shows statistically significant differences between the groups in the PCRS, NSS, and CBS-30 scales according to age, education status, working environment, weekly working hours, and COVID-19 knowledge ($p<0.05$). Nurses aged 25-30, with high school education, who perceived the working environment as moderate, with postgraduate education and 40 weekly working hours, and with good COVID-19 knowledge reported more stress and higher risk perceptions, as well as more caring behaviors ($p>0.05$) (Table 4).

Table 1. Findings Related to Demographic, Occupational and Pandemic Process Characteristics of Nurses (N=230)

Characteristics of Nurses		n	%
Age	20-24	70	30.4
	25-30	108	47.0
	31-35	30	13.0
	36 & +	22	9.6
Gender	Female	181	78.7
	Male	49	21.3
Marital status	Married	76	33.0
	Single	154	67.0
Education status	High School	23	10.0
	Associate degree	22	9.6
	Undergraduate	166	72.2
	Postgraduate	19	8.3
Has there been a change in the unit you work in due to the pandemic?	Yes	115	50.0
	No	115	50.0
How would you evaluate your working environment during the pandemic?	Very good	6	2.6
	Good	33	14.3
	Medium	76	33.0
	Bad	63	27.4
	Very Bad	52	22.6
Working style	Daytime	27	11.7
	Night	6	2.6
	Both	197	85.7
Weekly working hours	40 hours	33	14.3
	41-60 hours	161	70.0
	61 hours & +	36	15.7
Your work status in the Covid-19 clinic	Yes	155	67.4
	No	75	32.6
Do you have a chronic disease?	Yes	37	16.1
	No	193	83.9
Have you been infected with Covid-19?	Yes	151	65.7
	No	79	34.3
Did you want to leave your job during Covid-19?	Yes	109	47.4
	No	121	52.6
Are there people around you who are currently infected with Covid-19?	Yes	55	23.9
	No	175	76.1
Have you experienced loss (death) due to Covid-19?	Yes	118	51.3
	No	112	48.7
How would you evaluate your level of knowledge about the diagnosis. transmission. and treatment of Covid-19 disease?	Bad	8	3.5
	Medium	136	59.1
	Good	86	37.4

Table 2. T-Test Results of PCRS, NSS, and CBS-30 Scores According to the Descriptive Characteristics of Nurses

Descriptive		PCRS	NSS	CBS-30
		Mean ± SD	Mean ± SD	Mean ± SD
Gender	Female	31.45±5.88	81.35±17.57	154.77±21.37
	Male	28.86±7.47	77.22±10.89	151.16±27.53
t		***-2.142***	***2.003***	*-0.384*
P		***0.032****	***0.044****	*0.701*
Marital status	Married	31.24±6.89	78.08±13.41	154.47±23.95
	Single	30.73±6.05	81.66±17.67	153.77±22.29
t		*-1.057*	*-1.557*	*-0.495*
p		*0.290*	*0.121*	*0.621*
Has there been a change in the unit you work in due to the pandemic?	Yes	31.7±6.37	82.38±15.62	154.78±23.68
	No	30.1±6.21	78.57±17.08	153.23±21.97
t		***-2.217***	*1.769*	*-0.832*
p		***0.027****	*0.078*	*0.405*
Your work status in the Covid-19 clinic	Yes	31.66±6	81.72±15.24	157.52±20.72
	No	29.32±6.72	77.89±18.53	146.75±25.22
t		***-2.705***	*1.662*	***-3.010***
p		***0.007****	*0.098*	***0.003****
Do you have a chronic disease?	Yes	30.14±6.81	85.78±17.07	156.62±23.92
	No	31.05±6.24	79.46±16.16	153.5±22.61
t		*-0.882*	***-2.162***	*-1.066*
p		*0.378*	***0.032****	*0.286*
Have you been infected with Covid-19?	Yes	31.99±5.48	81.97±16.14	156.28±22.05
	No	28.81±7.28	77.62±16.73	149.66±23.71
t		***-2.985***	*1.915*	***-2.182***
p		***0.003****	*0.057*	***0.029****
Did you want to leave your job during Covid-19?	Yes	31.58±6.26	84.79±14.7	154.79±23.96
	No	30.29±6.35	76.59±17.01	153.3±21.78
t		*-1.685*	***-3.893***	*-0.909*
p		*0.092*	***0.000****	*0.364*
Are there people around you who are currently infected with Covid-19?	No	29.55±6.94	76.11±17.82	154.84±24.92
	Yes	31.33±6.08	81.85±15.79	153.74±22.16
t		*-1.672*	***-2.278***	*-0.649*
p		*0.095*	***0.024****	*0.516*
Have you experienced loss (death) due to Covid-19?	No	29.84±6.84	79.91±15.5	153.4±23.07
	Yes	32.02±5.55	81.07±17.42	154.64±22.6
t		***-2.321***	*-0.536*	*-0.356*
p		***0.020****	*0.592*	*0.722*

**p<0.05*

PCRS: Perceived COVID-19 Risk Scale, NSS: Nursing Stress Scale, CBS-30: Caring Behaviours Scale,

SD: Standard Deviasion

Table 3. One-way ANOVA Results of PCRS, NSS and CBS-30 Scores According to the Descriptive Characteristics of Nurses				
Descriptive Characteristics		**PCRS**	**NSS**	**CBS-30**
		Mean ± SD	**Mean ± SD**	**Mean ± SD**
Age	20-24 (1)	29.24±5.93	81.03±18.63	152.31±23.22
	25-30 (2)	31.71±5.69	81.68±16.05	153.27±21.6
	30-35 (3)	30.3±8.98	77.77±16.48	157.67±28
	35 & + (4)	33±5.2	76.5±9.14	158±19.73
t		***10.485***	*0.918*	*4.202*
p		***0.015****	*0.433*	*0.240*
Post-hoc		***2>1***		
Education status	High School (1)	27.7±6.68	77.52±13.82	154.57±21.45
	Associate degree (2)	28.41±7.34	76.23±9.18	149.95±24.27
	Undergraduate (3)	31.63±6.01	80.7±17.54	154.04±23.39
	Postgraduate (4)	31.32±5.94	86.95±14.45	157.68±17.79
t		***11.818***	***2.930***	*0.896*
p		***0.008****	***0.043****	*0.826*
Post-hoc		***1<One***	***4>2***	
How would you evaluate your working environment during the pandemic?	Very good (1)	29.08±6.66	79.72±21.14	150.82±22.62
	Good (2)	29.71±6.67	77.07±14.3	155.87±23.87
	Medium (3)	32.56±4.36	82.16±16.77	151.1±20.93
	Bad (4)	32.00±6.99	83.98±14.29	157.19±23.43
t		***12.197***	*2.158*	*5.585*
p		***0.007****	*0.094*	*0.134*
Post-hoc		***3>1***		
Weekly working hours	40 hours (1)	29.76±7.2	74.97±15.61	149.79±25.44
	41-60 hours (2)	31.07±6.16	80.53±16.32	155.63±21.69
	61 hours & + (3)	31.19±6.28	85.28±16.62	150.58±24.88
t		*0.830*	***3.460***	*1.635*
p		*0.660*	***0.033****	*0.441*
Post-hoc			***1<2***	
How would you evaluate your level of knowledge about the diagnosis. transmission and treatment of Covid-19 disease?	Bad (1)	30.25±7.57	83.63±9.55	148±33.3
	Medium (2)	30.9±6.2	81.83±16.68	149.7±23.69
	Good (3)	30.95±6.49	78.03±16.4	161.37±18.17
t		*0.014*	*1.564*	***13.348***
p		*0.993*	*0.211*	***0.001****
Post-hoc				***3>2***

*p<0.05
PCRS: Perceived COVID-19 Risk Scale, NSS: Nursing Stress Scale,
CBS-30: Caring Behaviours Scale, SD: Standard Deviasion

Tablo 4. Correlation Table of the Scales

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	**Cognitive Dimension Personal Risk**	1.000														
2	**Emotional Dimension Personal Risk**	0.337**	1.000													
3	**Total Risk**	0.784**	0.818**	1.000												
4	**Uncertainty about treatment**	0.155*	0.026	0.112	1.000											
5	**Workload**	0.173**	0.169*	0.186**	0.223**	1.000										
6	**Patient Death**	0.098	0.129	0.123	0.356**	0.145*	1.000									
7	**Conflict with Physician**	0.118	0.056	0.085	0.512**	0.267**	0.464**	1.000								
8	**Conflict with other nurses**	0.128	0.086	0.118	0.487**	0.258**	0.487**	0.604**	1.000							
9	**Inadequate Support**	0.098	0.097	0.126	0.381**	0.235**	0.325**	0.460**	0.550**	1.000						
10	**Suffering Patient**	0.118	0.187**	0.203**	0.339**	0.262**	0.477**	0.472**	0.515**	0.455**	1.000					
11	**NSS**	0.186**	0.129	0.180**	0.707**	0.514**	0.664**	0.760**	0.795**	0.640**	0.646**	1.000				
12	**Respect for Others**	0.132*	0.145*	0.149*	-0.088	0.130*	0.081	-0.045	-0.041	-0.036	-0.022	0.021	1.000			
13	**Professional Knowledge and Attitude**	0.089	0.146*	0.137*	-0.165*	0.169*	0.025	-0.113	-0.084	-0.095	-0.087	-0.037	0.839**	1.000		
14	**Being Accessible for the Individual**	0.162*	0.188**	0.210**	-0.173**	0.192**	0.054	-0.128	-0.088	-0.063	-0.048	-0.020	0.807**	0.836**	1.000	
15	**CBS-30**	0.147*	0.169*	0.181**	-0.157*	0.166*	0.059	-0.099	-0.072	-0.073	-0.051	-0.016	.943**	0.935**	0.933**	1.000

**p<0.001; *p<0.05

NSS: Nursing Stress Scale, CBS-30: Caring Behaviours Scale

DISCUSSION

This study showed that surgical nurses exhibited a high level of care behavior, with stress levels and COVID-19 risk perception above average. According to the literature, although risk perception tends to decrease with increasing age in the general population (22), in a study conducted by Sener (2022), the 18-34 age group had a higher risk perception than the older age group (23). Another study of Israeli nurses found a statistically negative relationship between age and risk perception (24). In our study, the fact that the perceived COVID-19 risk perception was higher at an older age suggests that it may be due to the possibility that nurses may be married and have children in this age group in general and that they are worried about carrying the virus to their families.

Female nurses in our study had higher COVID-19 risk perceptions than male nurses, perhaps because they were the majority occupational group and had direct contact with infected patients. In addition, Babapour et al. (2022), who concluded similar to ours, associated the higher stress levels of female nurses compared to males with their different roles in daily life (26). Considering the high mortality rate during the epidemic, the fact that female nurses witnessed the death and suffering of the patients they cared for suggests that they may have interacted more with their patients due to their empathy skills and tendency to bond. These interactions may lead to increased stress levels among female nurses and emotional reactions to the condition of suffering patients.

In our study, nurses with a bachelor's degree exhibited higher risk perception than high school graduates, which is consistent with previous research (27, 28). Similarly, a study in Turkey showed that professionals with higher education levels, such as health workers and lawyers, had increased risk perception and positive attitudes towards vaccination (29). The elevated risk perception among nurses with bachelor's degrees may be attributed to their enhanced COVID-19 research and literacy. In contrast to our findings, Öz, Batmaz, and Yazıcı (2022) found no significant link between nurses' educational levels and work-related stress but identified differences in coping strategies. Graduate nurses prefer managing stress through problem-oriented approaches and seeking emotional support (30). Postgraduate nurses might experience heightened stress due to patient suffering, discussions about death, and witnessing deaths without sufficient consent, differing from their less-educated counterparts.

Healthcare professionals, particularly nurses in pandemic units, exhibited high-risk perceptions when caring for COVID-19 patients (31, 32). Few studies have explored the connection between clinical changes during the pandemic and nurses' COVID-19 risk perception. However, a study aligned with our findings attributed dentists' elevated risk perception in field teams to their close contact with infected patients (33). The COVID-19 risk perception of most of our participants, predominantly in surgical clinics and intensive care facilities, may have been heightened due to the challenging working conditions during the pandemic. This could be attributed to factors such as visit restrictions, companion bans, the need for one-on-one patient-relative communication, the use of protective equipment, and increased difficulty in providing patient care while using such equipment.

The literature supports our finding that nurses who lost their relatives due to coronavirus experienced more fear of COVID-19 (35). The pandemic may cause nurses to feel more anxious and traumatized, leading to psychological symptoms such as fear and depression. These emotional difficulties may also increase nurses' risk perceptions.

According to our research findings, nurses working more than 40 hours had higher stress levels than those working fewer hours. The results of Mo et al. (2020), who reported that weekly working hours are among the main factors affecting nurses' stress, support our findings (36). According to the results of our research, although there was no statistically significant relationship between nurses' stress levels and shift types, the literature shows that nurses' stress levels vary depending on their shifts. For example, Bucaklı (2022) stated that nurses working during the day experience more stress (37), while Majumdar et al. (2020) indicated that night shifts are an essential stress factor that can affect physical and psychological well-being through the disruption of circadian rhythms, sleep, and physiological processes and cause significant changes in work performance (38). Working hours on the night shift are longer than on the day shift, which may cause nurses to experience more stress, workload burnout, fatigue, and insomnia and decrease job satisfaction and quality of life.

High job stress prompts individuals to consider quitting, mainly because of heavy workloads, long hours, job challenges, and economic pressure, leading to elevated stress, hopelessness, and burnout among nurses. (39, 40, 41). According to the results of our study, nurses contemplating leaving their jobs during the pandemic experienced higher stress levels. However, the existing literature also shows that fear of COVID-19 (42) and stress levels (43) do not significantly impact nurses' stress levels. Our study's results are significant considering the pandemic's intense and challenging working conditions, characterized by uncertainty and variability.

Our study showed that nurses working in COVID-19 clinics exhibited higher caring behaviors. While a study in the literature supported similar results (44), another study reported that increased caring behavior in nurses led to decreased work stress and job satisfaction (45). However, Kalın (2022) reported that nurses caring for infected patients for a long time did not exhibit healthier life behaviors (46). The self-sacrificing work of nurses during the pandemic process has been appreciated worldwide, and the devotion of nurses has been emphasised. Our findings may explain the nurses ' selflessness during this process. However, nurses know that patients experience serious health problems due to COVID-19. Therefore, awareness of the urgency and importance of working with infected patients may encourage nurses to provide more careful and attentive care. Furthermore, a study by Koca (2022) suggests that nurses who have COVID-19 empathize with patients and better identify their care needs may positively affect their care behaviors (47). In addition to increasing empathy skills, developing more effective care strategies based on personal experiences may improve the care behaviors of infected nurses.

Nurses experienced a lack of knowledge and skills during the early stages of the pandemic (48) and training in areas such as personal protective equipment, hand hygiene, unit disinfection, medical waste management, and occupational exposure management (40). Susanti et al. (2022) reported that the training given to nurses supports their work

culture and care behaviors (50). Similarly, this study found that nurses who described their COVID-19 knowledge level as good exhibited higher care behaviors. Knowledge, attitude, and behavior help nurses avoid occupational exposure to Covid-19 and prevent infections (51). The experience and knowledge gained in this process may keep them working more effectively in health services and providing quality care. In addition, access to continuously updated information and collaboration with colleagues can help nurses improve their care skills and achieve better outcomes. Therefore, increased experience, knowledge, and expertise in the fight against the pandemic may contribute to nurses demonstrating more caring behaviors and strengthening their professional attitudes.

CONCLUSION

The results of the current study revealed that most of the nurses in the sample were relatively young, female, and single. Although the surgical nurses participating in the study had high-stress levels and COVID-19 risk perception, their care behaviours also increased, even in the second year of the pandemic. Understanding the psychological and social needs of nurses, who work at the forefront of the global health problem that threatens life, and the implications for health institutions to take support and measures for them remain essential during the ongoing years of the pandemic. The results of this research may contribute to creating policies and management decisions based on practices to improve nurses' working conditions, reduce their stress levels, and manage their perceptions of COVID-19 risk and care behaviors. In disaster situations, such as the COVID-19 pandemic, a fair and balanced workload of nurses, regular working hours, and meeting the need for resources and personnel can prevent nurses from working under excessive stress. Strong peer support among nurses can increase their job satisfaction, reduce work stress, and improve the quality of patient care by positively affecting the working environment. Effective communication and cooperation among nurses should be encouraged, and emotional and professional support should be provided.

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