



## **Nurses' Perception of Occupational Safety During The Covid 19 Pandemic**

### Covid-19 Pandemisi Sürecinde Hemşirelerin İş Güvenliği Algısı

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## NURSES' PERCEPTION OF OCCUPATIONAL SAFETY DURING THE COVID 19 PANDEMIC

### ABSTRACT

**Aim:** This study aims to determine nurses' perceptions of occupational safety during the COVID-19 pandemic.

**Method:** This study was conducted based on cross-sectional research principles. The sample of the study includes 160 nurses working in three public hospitals in Sakarya province. The research data were collected through a questionnaire consisting of four parts about nurses' personal characteristics, working conditions, occupational diseases/complaints and occupational accidents/injuries, and occupational safety measures taken during the pandemic period.

**Results:** In the study, more than half of the participants (66.4%) had COVID-19 disease, (71.3%) did not find the personal protective equipment of sufficient quality, (68.8%) the working environment was not adequately ventilated, (67.5%) stated that orientation training was not given to nurses assigned from different fields. The mean score for "occupational diseases and complaints" of participants was  $29.4 \pm 16.2$ , and the mean score for "support given to employees" by the institution during the pandemic was  $4.1 \pm 2.5$ . Nurses who worked continuously during the day shift did not have an accident at work, did not have COVID-19, studied occupational safety during the pandemic, and did not plan to leave jobs were found to have a significantly higher level of occupational safety measures than other nurses ( $p < 0.05$ ).

**Conclusions and Recommendations:** It was detected that more than half of the nurses were considering leaving their jobs during the pandemic, the majority of them were not satisfied with the "employee health and safety policies" and found the "occupational safety measures" taken to be partially sufficient. Nurses face extraordinary challenges when responding to unique, uncertain, and ever-changing situations around the world. Appropriate and effective strategies must be identified and implemented to protect nurses. Regulations to improve nurses' working conditions can reduce health risks and help strengthen healthcare response during a pandemic.

**Keywords:** Nurse, Occupational Health, Occupational Safety, Pandemic.



## COVID-19 PANDEMİSİ SÜRECİNDE HEMŞİRELERİN İŞ GÜVENLİĞİ ALGISI

### ÖZ

**Amaç:** Bu çalışmanın amacı hemşirelerin COVID-19 pandemisi sürecinde iş güvenliğine ilişkin görüşlerinin belirlenmesidir.

**Yöntem:** Bu çalışma, kesitsel araştırma ilkelerine dayalı olarak yapılmıştır. Araştırmanın örneklemini Sakarya ilinde bulunan üç devlet hastanesinde çalışan 160 hemşire oluşturmaktadır. Araştırma verileri, hemşirelerin kişisel özellikleri, çalışma koşulları, meslek hastalıkları/şikayetleri ve iş kazaları/yaralanmaları ve pandemi döneminde alınan iş güvenliği önlemleri ile ilgili dört bölümden oluşan anket aracılığıyla toplanmıştır.

**Bulgular:** Araştırmada hemşirelerin yarısından fazlası (%66.4) COVID-19 hastalığı geçirmiş olduğunu, (%71.3) kişisel koruyucu ekipmanları yeterli kalitede bulmadığını, (%68.8) çalışma ortamının uygun ve yeterli düzeyde havalandırılmadığını, (%67.5) farklı alanlardan görevlendirilen hemşirelere oryantasyon eğitimlerinin yapılmadığını belirtti. Katılımcıların "meslek hastalık ve şikayet" puan ortalaması  $29.4 \pm 16.2$ , kurum tarafından pandemi süresince "çalışanlara verilen destek" puan ortalaması  $4.1 \pm 2.5$  puan olarak belirlendi. Sürekli gündüz çalışan, iş kazası geçirmeyen, COVID-19 geçirmeyen, pandemi sürecinde iş güvenliği eğitimi alan, işten ayrılmayı düşünmeyen hemşirelerin iş güvenliği önlemlerini yeterli bulma durumu diğer hemşirelere göre anlamlı düzeyde yüksek bulundu ( $p < 0.05$ ).

**Sonuç ve Öneriler:** Hemşirelerin yarısından fazlasının pandemi döneminde işten ayrılmayı düşündüğü, çoğunluğunun çalışan sağlığı ve güvenliği politikalarından memnun olmadığı ve alınan iş güvenliği önlemlerini kısmen yeterli bulduğu tespit edildi. Hemşireler dünya çapında sürekli olarak değişen durumlara yanıt verirken olağanüstü zorluklarla karşılaşmaktadır. Hemşireleri korumak için uygun ve etkili stratejiler belirlenmeli ve uygulanmalıdır. Hemşirelerin çalışma koşullarını iyileştirmeye yönelik düzenlemeler sağlık risklerini azaltabilir ve bir pandemi sırasında sağlık hizmetlerinin müdahalesini güçlendirmeye yardımcı olabilir.

**Anahtar Kelimeler:** Covid-19, Hemşire, İş sağlığı, İş güvenliği.



## INTRODUCTION

Hospitals are health institutions that include many occupational groups, and since they contain all of the multiple risk factors such as biological, physical, chemical, and radioactive, there is a higher probability of illness, work accident, disability, and occupational disease when compared to those working in different workplaces (Öztürk et al., 2012). Nurses, who are important members of the healthcare teams working in hospitals and constitute the majority, are more likely to be exposed to the probability of illness, work accidents, disability, and occupational disease than other team members (Bayer & Günal, 2018).

Nurses serve at the frontline for 24 hours during the pandemic, and they are members of healthcare teams that are “very high” risk groups, according to the Occupational Safety and Health Administration (OSHA) (OSHA, 2020). Nurses are in the highest risk group due to inadequate personal protective equipment (PPE), lack of workplace safety training and preparation, exposure to COVID-19, and poor conditions in their work environment (Hiçdurmaz & Uzar Özçetin, 2020; Jackson et al., 2020). As during most epidemics and pandemics, nurses are at the forefront of the fight against COVID-19. Nurses have critical roles in combating the epidemic, such as preparing for possible epidemics, providing appropriate intervention during the epidemic, managing activities, evaluating the effectiveness of initiatives implemented in the fight against the epidemic, raising public awareness, and providing the right health behaviors (Şenol Çelik et al., 2021).

Nurses represent more than half of the healthcare industry in the world. They have mobilized to fight the virus, which has spread to 216 countries and infected more than six million people (Kiyat et al., 2020). Due to the pandemic conditions, nurses work in very difficult conditions and may even face death as a result of exposure to the COVID-19 virus (Yavuz & Gür, 2021). In addition to exposure to the virus, nurses face other occupational hazards such as long working hours, fatigue, mental exhaustion caused by the workload, stress, and physical and psychological injuries (World Health Organization [WHO], 2020).

Accordingly, the protecting of nurses who spend the most time with the infected individual in health institutions is one of the most important priorities (Ministry of Health, 2021). Considering the high risk of disease and transmission that healthcare professionals face during the pandemic, the implementation of “occupational health and safety” measures for the protection of all employees working during the health services offered comes into prominence. Based on this information, this study aimed to “determine the perception of nurses on occupational safety during the COVID-19 pandemic”.

### Research questions:

1. What are the characteristics of nurses' working conditions during the pandemic?
2. What are the satisfaction rates of nurses regarding their working conditions?
3. What are the occupational safety measures taken during the pandemic process?

## METHOD

**Participants:** This research is a cross-sectional study to determine the perception of nurses about occupational safety during the COVID-19 pandemic. The research was carried out in three public hospitals located in Sakarya province between August and November 2021. The population of the research consisted of 1380 nurses working in three public hospitals in Sakarya province. The aim of the study was to reach the entire research population without selecting a sample, but it was difficult to reach nurses due to reasons such as intense work tempo during the pandemic period, increase in the number of infected patients, lack of nurses and increase in workload due to nurses being infected. The sample of the study consisted of 160 nurses who volunteered to participate in the study.

**Data Collection:** The study data was collected online using Google forms ([google.com/forms/about/](https://google.com/forms/about/)). In the collection of research data, a questionnaire prepared in line with the literature and consisting of questions about "nurses' personal characteristics", "working conditions", and "occupational safety" during the pandemic was used (Terzi et al., 2019; Öztürk et al., 2012; Ateş, 2020; Şahan et al., 2020; TR Ministry of Labor and Social Security, 2020; Çelikkalp et al., 2016).

The data collection tools were sent to the participating nurses as a link to the online platform. The Google form was sent by nurse managers as a link to nurses' WhatsApp groups. It took approximately 20-25 minutes for nurses to complete the survey. Further details about the data collection tools are provided below:

**Personal Characteristics Form:** This form consists of 11 questions about "gender, age, marital status, education status, presence of chronic health problems, presence of mental health problems, years of professional experience, institution, year of work in the institution, unit of work, and COVID-19 disease status". (Terzi et al., 2019; Öztürk et al., 2012; Ateş, 2020; Şahan et al., 2020; TR Ministry of Labor and Social Security, 2020; Çelikkalp et al., 2016).

**Features Regarding Working Conditions Form:** This form consists of 21 questions prepared to evaluate the satisfaction with the way of working, the number of days off per week, the situation of increasing the number of days off to reduce the viral load of the institution, the adequacy of the number of nurses in the institution, the situation of considering leaving the job during the pandemic, the number

of patients being above the capacity of the institution, the weekly working hours, the support and working conditions of the institution given to the employees during the pandemic (Terzi et al., 2019; Öztürk et al., 2012; Ateş, 2020; Şahan et al., 2020; TR Ministry of Labor and Social Security, 2020; Çelikkalp et al., 2016).

**Occupational Safety Measures Taken During the Pandemic Form:** This form consists of 34 questions about the “nurses’ personal protective equipment (PPE), physical conditions of the working environment, the educational activities of the institution, their views on administrative regulations, and adequacy status of the measures” (Terzi et al., 2019; Öztürk et al., 2012; Ateş, 2020; Şahan et al., 2020; TR Ministry of Labor and Social Security, 2020; Çelikkalp et al., 2016).

**Data Analysis:** “SPSS 27.0 program” was employed for statistical analyses. The “mean, standard deviation, median, lowest, highest, frequency, and ratio values” were used for the representation of the data. The distribution of variables was measured by the “Kolmogorov-Smirnov test”. “Pearson Chi-Square test”, “Fisher’s Exact test” were used to compare quantitative data. The “Kruskal-Wallis test” was used to analyze the quantitative independent data.  $P < 0.05$  was accepted as statistically significant.

**Ethical Considerations:** To implement the study, the relevant procedure was provided by the “X Non-Interventional Clinical Research Ethics Committee”, the ethical compliance decision was obtained on 09.06.2021 (E108498-772.02-2694) and the study permit was obtained from the “Ministry of Health COVID-19 Scientific Research Platform”. Nurses working in the hospitals where the research was conducted were informed and supported about the research. Participants in the study were informed about the “purpose, plan, duration of the study, how and where the data obtained would be used”, and in the light of voluntariness, their informed consent was obtained through the Google form application. The principle of loyalty-confidentiality was assured to the participants that the data disclosure would not be used by anyone other than the researchers and in any way other than for research purposes. The data were collected in periods that would not interfere with the nurses’ working, and the principles of not harming and benefiting were taken into consideration.

## Limitations

The research is limited to nurses in the three public hospitals in Sakarya. Due to the increased workload and busy schedules of nurses during the pandemic, the participation rate in this study was low, and the targeted sample size could not be reached. Therefore, the results cannot be generalized to the wider nursing population in Turkey. In addition, since this study was conducted as a descriptive study, it is not possible to explain the causal relationships between the investigated variables.

## RESULTS

77.5% of the nurses were female, and the mean age was  $33.9 \pm 7.3$ . 61.9% of participants are married, and 78.8% are undergraduate graduates. It was determined that 32% of the participants were working in the operating room with an average of  $12.1 \pm 7.5$  years of experience, and the average working time in the institution was  $8.5 \pm 5.4$  years. It was determined that 30.6% of participants had chronic health problems, and 6.3% had mental health problems. 64.4% of participants have had COVID-19 disease (Table 1).

**Table 1.** Personal characteristics of nurses

Features		n	%
Gender	Female	12	77.5%
	Male	36	22.5%
Marital status	Single	61	38.1%
	Married	99	61.9%
Educational status	Undergraduate	12	78.8%
	Graduate	14	8.8%
	Associate Degree	16	10.0%
	Health Vocational High School	4	2.5%
Presence of chronic health problems	Yes	49	30.6%
	No	11	69.4%
Presence of mental health problems	Yes	10	6.3%
	No	15	93.8%
Work unit	Operating room	52	32.5%
	Inpatient services	45	28.1%
	Emergency	21	13.1%
	Intensive care	21	13.1%
	Management/ Administration	5	3.1%
	Outpatient clinic	3	1.9%
	Other	13	8.1%
COVID-19 disease status	No	57	35.6%
	Yes	10	64.4%
	<b>Min-Max</b>	<b>Median</b>	<b>Mean<math>\pm</math>SD</b>
Age (year)	18.0-48.0	34.0	33.9 $\pm$ 7.3
Year of professional experience	1.0-32.0	10.0	12.1 $\pm$ 7.5
Year of study at the institution	1.0-21.0	8.0	8.5 $\pm$ 5.4

Characteristics of the working conditions of the nurses were examined, and it was determined that 49.4% of participants worked in mixed shifts (day-night). The mean weekly working hours were determined as  $45.7 \pm 7.2$  hours, and 65% of the nurses stated that they had two days off per week. 83.1% of participants stated that the institution did not increase the number of days off to reduce the viral load. It was determined that 83.8% of the participants found the number of patients was above the capacity of the institution where they worked, and 78% of the nurses stated that the number of nurses in the institution was insufficient. It was determined that 60% of the participants were considering leaving their job during the pandemic, and the institution gave the support given to the employees during the pandemic  $4.1 \pm 2.5$  points out of 10 points (Table 2).

**Table 2.** Features of the working conditions of nurses

Features		n	%
Manner of work	Continuous Day Shift	38	23.8%
	Continuous Night Shift	43	26.9%
	Mixed Shift	79	49.4%
Number of days off per week	0	8	5.0%
	1 day	15	9.4%
	2 days	10	65.0%
	3 days	26	16.3%
	4 days	7	4.4%
Institution to increase the number of days off for reducing the viral load	Yes	27	16.9%
	No	13	83.1%
Adequacy of the number of nurses in the institution	Yes	34	21.2%
	No	12	78.8%
Presence of occupational diseases/complaints	Yes	11	70.6%
	No	47	29.4%
Occupational accident/injury status	Yes	12	80.0%
	No	32	20.0%
Considering leaving the job during the pandemic	Yes	96	60.0%
	No	64	40.0%
Number of patients above the capacity of the institution	Yes	13	83.8%
	No	26	16.2%
Performing the operations that cause droplet contamination (swab, aspiration, bronchoscopy, intubation, etc.)	Yes	49	30.6%
	No	11	69.4%
	Min-Max	Median	Mean $\pm$ SD
Weekly working hours	24.0-72.0	48.0	45.7 $\pm$ 7.2
The support provided by the institution to employees during the pandemic	0.0-10.0	4.0	4.1 $\pm$ 2.5



When their satisfaction with working conditions is questioned, it revealed that nurses were not satisfied with different topics as follows: 62.5% with working hours, 64.4% with the distribution of tasks, 81.9% with the workload, 78.8% with the adequacy of the number of nurses, 63.8% with the design of the working environment, 50.6% with the interpersonal relations in the working environment and 61.9% with the quality of the consumables and the PPE. It was determined that 77.5% of the participants were satisfied with working in the unit. Employee safety measures (vaccination, protective equipment, tools) were taken by 53.1% of nurses; 74.4% were dissatisfied with employee health and safety policies, and 68.8% were dissatisfied with employee safety training (Table 3).

The findings regarding the views of nurses on PPE, physical conditions of the working environment, educational activities of the institution, and administrative regulations during the pandemic are given below. 82.5% of the participants stated that PPE, 53.1% handwashing sinks, and 75% disinfectants were sufficient. 71.3% of the participants stated that the PPE, 43.1% of the cleaning materials used, and 61.9% of the consumables used were low quality (Table 3).

**Table 3.** Status of satisfaction with nurses' working conditions

Features	I am not satisfied		I am satisfied	
	n	%	n	%
Working hours/guard duties	10	62.5%	60	37.5%
Task distribution	10	64.4%	57	35.6%
Workload	13	81.9%	29	18.1%
Adequacy of number of nurses	12	78.8%	34	21.3%
Equipment and design of the working environment	10	63.8%	58	36.3%
Interpersonal relations in the work environment	81	50.6%	79	49.4%
The quality of consumables and personal protective material used	99	61.9%	61	38.1%
Satisfaction with the unit/service/unit worked on	36	22.5%	12	77.5%
Employee safety measures (vaccination, protective equipment, tools and equipment, etc.)	85	53.1%	75	46.9%
Employee health and safety policies	11	74.4%	41	25.6%
Trainings on employee safety	11	68.8%	50	31.3%
Taking responsibility / support of the institution in case of an occupational accident / occupational disease	10	68.1%	51	31.9%

66.9% of the participants stated that there are crossing signs by the social distance rule in the general areas (dining hall, elevator, service, and polyclinic) within the hospital, but they are insufficient. Regarding the suspected/confirmed COVID-19 patients, nurses stated that 68.8% of the isolation rooms were partially sufficient, and 66% of the doors separating the sections were not equipped with sensors. 68.8% of the participants reported that the working environment was not adequately ventilated, and 71.3% reported the absence of effective ventilation filters. 81.9% of the participants stated that the elevators where patients with COVID-19 were transferred were not separated from the others (Table 4).

It was determined that 51.9% of the participants received occupational safety training during the pandemic, and 66.3% did not read the “notification on ensuring patient and employee safety in health organizations”. 67.5% of the participants stated that the orientation training of the nurses assigned from other fields during the pandemic was not carried out. 43.8% of the participants stated that the employees in the institution did not receive training for the care of patients with COVID-19, and 81.9% of nurses stated that they did not receive training on swab taking, aspiration, bronchoscopy, intubation procedures for patients with a diagnosis of COVID-19 (Table 4).

Findings regarding the views of the nurses on administrative regulations applied to ensure occupational safety during the pandemic are as follows: 62.5% of the participants have an occupational safety committee in the hospital, 82.5% use the sharps injury form, 68.1% use the work accident notification form, 48.1% use the occupational diseases notification form. It was determined that 66.2% of the technological devices used were periodically maintained, and 85.6% of the participants stated that the shift lists were not arranged in a way to prevent the employees from being exposed to COVID-19. 60.6% of the participants stated that the safety reporting systems were not used effectively when faced with an error regarding occupational safety during the pandemic. 68.1% of the nurses stated that the management was sensitive to the issues related to occupational safety, and 8.1% stated that the activities carried out in the workplace and the organization of the work were partially sufficient to prevent the exposure of the employees to COVID-19. 84.4% of the participants stated that COVID-19 contact employees were followed up, and 49.4% of them stated that a separate work plan was partially prepared for the employees in the vulnerable/risk groups (Table 4).

**Table 4.** Nurses' opinions on occupational safety measures taken during the pandemic

	<b>Materials</b>		<b>n</b>	<b>%</b>
PERSONAL PROTECTIVE EQUIPMENT	Adequacy of the number of personal protective equipment	Yes	132	82.5%
		No	28	17.5%
	Quality of personal protective equipment	Yes	46	28.8
		No	114	71.3%
	Adequacy of hand washing sinks	Yes	85	53.1%
		No	75	46.9%
	Adequacy of disinfectants	Yes	120	75.0%
		No	40	25.0%
	Quality of cleaning materials used	Yes	91	56.9%
		No	69	43.1%
	The quality status of the consumable material used	Yes	61	38.1%
		No	99	61.9%
PHYSICAL CONDITIONS	Making transition markings by with the social distance rule in the areas used collectively within the hospital (dining hall, elevator, service, and polyclinics)	Yes	45	28.1%
		Partially sufficient(b)	107	66.9%
		No	8	5.0%
	Making arrangements to establish a safe distance (1.5-2 meters) at the secretarial desks	Yes	118	73.8%
		No	42	26.2%
	Presence of an isolation room for suspected/ confirmed COVID-19 patients	Yes	42	26.2%
		Partially sufficient(b)	110	68.8%
	No	No	8	5.0%
		Routine cleaning and disinfection of surfaces, equipment, and other elements of the working environment	Yes	132
	No		28	17.5%
	The status of the doors separating the sections with sensors	Yes	19	11.9%
		Partially sufficient(b)	37	23.1%
		No	104	66.0%
	Posting banners/posters/instructions in work areas where everyone can see to inform employees about the symptoms and spread of COVID-19	Yes	152	95%
		No	8	5.0%
	Proper and adequate ventilation of the working environment	Yes	50	31.2%
		No	110	68.8%
	The presence of ventilation filters with high protection	Yes	46	28.8
		No	114	71.3%
	Elevators in which patients with COVID-19 are transported are separated from others	Yes	29	18.1%
No		131	81.9%	

EDUCATION	The situation of receiving occupational safety education during the COVID-19 pandemic	No	77	48.1%
		Yes	83	51.9%
	Reading the notification on ensuring patient and employee safety in health institutions and organizations	Yes	54	33.8%
		No	106	66.2%
	Providing training to employees in the care of patients with COVID-19 in the institution	Yes	90	56.3%
		No	70	43.8%
	Orientation training for nurses assigned to different areas during the pandemic	Yes	52	32.5%
		No	108	67.5%
	Receiving training on swabbing, aspiration, intubation, etc. procedures in a patient with COVID-19 in the institution	Yes	29	18.1%
		No	131	81.9%
Education for evidence-based guidelines in the care of patients with COVID-19	Yes	108	67.5%	
	No	52	32.5%	
Presence of an occupational health and safety committee	Yes	100	62.5%	
	No	7	4.4%	
	I don't know	53	33.1%	
Using the sharps injury form	Yes	132	82.5%	
	No	28	17.5%	
Use of an occupational accident notification form	Yes	109	68.1%	
	No	51	31.9%	
Use of occupational diseases notification form	Yes	77	48.1%	
	No	83	51.9%	
Periodic checks of the technological devices used	Yes	106	66.2%	
	No	54	33.8%	
Effective use of safety reporting systems when faced with an error in occupational safety during the pandemic	Yes	63	39.4%	
	No	97	60.6%	
Sensitivity of management to reported issues related to occupational safety	Yes	109	68.1%	
	No	51	31.9%	
Evaluation of psychosocial risk factors to protect the mental health of employees	Yes	18	11.3%	
	Partially sufficient(b)	96	60.0%	
	No	46	28.8%	
Regulation of workplace activities and work organization in a way that prevents employees from being exposed to COVID-19	Yes	23	14.4%	
	Partially sufficient(b)	125	78.1%	
	No	12	7.5%	
Arranging guard duty lists to prevent workers from being exposed to COVID-19	Yes	23	14.4%	
	No	137	85.6%	
COVID-19 contact person tracing	Yes	135	84.4%	
	No	25	15.6%	
Presence of a separate work plan for employees in vulnerable/risk groups	Yes	21	13.1%	
	Partially	79	49.4%	
	No	60	37.5%	
Adequacy of occupational safety measures	Sufficient	17	10.6%	
	Partially sufficient(b)	123	76.9%	
	Insufficient	20	12.5%	

ADMINISTRATIVE REGULATIONS

It has been determined that there is no difference between the nurses' satisfaction with the occupational safety measures taken during the COVID-19 pandemic according to their "gender, marital status, educational status, presence of chronic illness, presence of mental illness, presence of occupational disease/complaints, and satisfaction with employee health and safety policies". ( $p>0.05$ ). Nurses who constantly work during the day shift, do not have a work accident/injury, do not have COVID-19, receive occupational safety training for the pandemic, and do not plan to leave the job found occupational safety measures to be adequate significantly higher than other nurses ( $p<0.01$ ). The perceived support score of the institution during the pandemic was examined according to the nurses' finding sufficient occupational safety measures. The score of the nurses who stated that the measures were sufficient was statistically significantly higher than the nurses who stated that the measures were partially sufficient or insufficient (Table 5).

**Table 5.** Finding adequate occupational safety measures taken during the pandemic according to nurses' personal and working conditions characteristics

Features		Finding adequate occupational safety measures				Statistics	
		Sufficient	Partially sufficient	Insufficient	x <sup>2</sup>	p	
		(a)	(b)	(c)			
		n	n	n			
Gender	Female	14	96	14	0.943	0.647	
	Male	3	27	6			
Marital status	Single	3	48	10	4.252	0.120	
	Married	14	75	10			
Educational status	Health vocational high school	2	2	0	10.620	0.054	
	Associate degree	2	11	3			
	Undergraduate	10	102	14			
	Graduate	3	8	3			
Manner of work	Continuous day shift	10	23	5	12.968	0.009*	
	Continuous night shift	3	9	67			
	Mixed shift	4	6	33			
Presence of chronic disease	Yes	6	37	5	0.467	0.792	
	No	11	85	15			

<b>Presence of mental illness</b>	Yes	0	9	1	1.459	0.482
	No	17	112	19		
<b>Work accident/injury status</b>	Yes	5	22	15	22.509	0.000*
	No	12	101	5		
<b>Presence of occupational diseases/complaints</b>	Yes	10	95	12	4.580	0.101
	No	7	28	8		
<b>COVID-19 disease status</b>	Yes	4	13	86	14.019	0.001*
	No	13	37	7		
<b>Status of receiving occupational safety training for the COVID-19 pandemic</b>	Yes	16	59	8	14.033	0.001*
	No	1	12	64		
<b>Satisfaction with employee health and safety policies</b>	Yes	13	28	1	5.584	0.102
	No	4	95	19		
<b>Considering leaving the job during the pandemic</b>	Yes	3	12	81	14.462	0.001*
	No	14	42	8		
<b>The perceived support score that the organization gives to employees</b>	N/Mean rank		Partially sufficient		KW	p
		Sufficient (a)	(b)	Insufficient (c)		
		17/123.71	123/77.36	20/63.8	18.473	0.000* a>b,c

$\chi^2$ : Pearson Chi-Square Test. Fisher's Exact Test; \* $p < 0.01$ ; KW: Kruskal Wallis test

## DISCUSSION

In this study, nurses' perceptions of occupational safety during the COVID-19 epidemic were examined. In general, the working population consists of nurses with more than 10 years of experience who work on average more than the number of staffed and weekly working hours (40 hours for public hospitals). It was determined that 64.4% of the nurses participating in this study had had COVID-19 disease. The COVID-19 pandemic has negatively affected the whole world.

According to the "International Council of Nurses (2020)", more than 600 nurses lost their lives due to inadequate PPE in early June 2020. Similarly, nurses in Brazil have reported problems with the limited supply or quality of PPE in their clinical settings despite receiving relevant training in using PPE (Santos et al. 2021). Similarly, this study determined that 61.9% of the nurses were not satisfied with the

quality of the consumables used. 71.3% of the nurses stated that the quality of PPE was not sufficient. Implementing infection control measures and the adequacy of PPE are key factors in effectively managing the pandemic. Full protection with adequate PPE should be supplied to nurses providing direct care to individuals infected with the COVID-19 virus to protect nurses against infection (Chen et al., 2020).

The majority of the nurses (81.9%) who participated in this study reported that the institution did not provide training on procedures that cause aerosolization in patients with COVID-19. 68.8% of participants stated that isolation rooms were not enough for possible/ certain COVID-19 patients. Evidence-based preventive measures should be followed to control the spread of COVID-19. For example, work that causes aerosolization (such as aspiration, bronchoscopy and bronchoscopic procedures, intubation, endoscopy, respiratory swabs, and other jobs requiring increased exposure to secretions) should be done in rooms adequately ventilated with natural airflow or, if possible, in negative pressure rooms (Krall et al., 2020; Tran et al., 2012).

66.9% of the participants stated that the transition markings were made by the social distance rule in the general areas (dining hall, elevator, service, and polyclinic) within the hospital, but it was not sufficient. To ensure the workplace safety of nurses during the pandemic, it is necessary to design convenient hospital units, eliminate restrictions on the provision of PPE, adjust nurse-patient ratios, and make arrangements to prevent excessive working hours (ILO, 2020).

Findings regarding the occupational safety measures taken in the working environment during the pandemic were examined, and 76.9% of the participants stated that the adequacy of the measures taken was at a moderate level. It was detected that 53.1% of the participants were not satisfied with the employee safety measures (vaccine, protective materials, equipment), 74.4% were not satisfied with the employee health and safety policies and 68.8% were not satisfied with the training for employee safety. Nurses are not adequately protected in their work environment due to non-reliable nurse numbers and poor quality equipment, and this brings ethical challenges and reduces the quality of care (Gebreheat & Teame, 2021; Kackin et al., 2021; Turale et al., 2020).

67.5% of the participants stated that the orientation training of the nurses assigned from other fields during the pandemic was not carried out. Dönmez (2020) also stated in her study that 92.2% of nurses received orientation training only when they started working in the institution, but in-service training was insufficient. In the study conducted by Türen et al. (2020), it was determined that the training modules used in the orientation programs for the unit increased the knowledge level of the nurses.

Nurses should be trained to increase their knowledge and skills at regular intervals in the units they work in. It is very important to conduct orientation training for nurses who have changed the unit to increase the qualification level of nurses and provide quality patient care. In this study, participants scored  $4.1 \pm 2.5$  out of 10 points on the “support provided by the institution to employees during the pandemic”. Based on these findings, it can be said that the administrative support perceived by the nurses is low. This result is consistent with other COVID-19 studies in the literature (Havaei et al., 2021; Labrague & Santos, 2020). A high level of support at work during the pandemic and high job satisfaction could reduce the fear of COVID-19.

When other studies on nurses working during the pandemic are examined, it has been revealed that the support received from the institution or health team is substantially effective in reducing the fear and stress levels of nurses (Havaei et al., 2021). The effectiveness of nursing services management and hospital management is very important in reducing nurses’ exposure rates to infection (Duygulu et al., 2020).

In the study, 60% of participants reported that they were considering leaving their jobs, and they stated their dissatisfaction due to the number of patients exceeding the hospital’s capacity, the increase in workload, and the lack of nurses. The relationship between employees and managers plays an important role in the successful deceleration of the COVID-19 process in health institutions. Showing helpful, problem-solving, and conciliatory features of managers will be able to prevent the intention to leave the job that is likely to occur in health workers. To prevent the spread of intention from leaving the job in health institutions, organizational policies and management practices should be of a nature to support employees, and subordinate parent relationships should be increased to support each other’s workloads (Akbolat & Ünal, 2021). Similarly, in the study of Dost et al. (2021), it was determined that nurses’ satisfaction with the working environment was low due to the increased number of patients during the pandemic, the low number of staff as a result of the high number of nurses on leave due to illness, long working hours, and short resting periods. Santos et al. (2021) suggest that urgent improvements should be made in the working conditions of nurses. Nurses are not adequately protected in work environments due to unsafe, non-reliable numbers, low-quality equipment, increased workload and changing routines, and lack of clarity of their roles, this brings ethical difficulties and reduces the quality of care (Gebreheat & Teame, 2021; Kackin et al., 2021; Turale et al., 2020).



## Conclusion and Recommendation

The opinions of nurses on occupational safety during the COVID-19 pandemic were examined in line with the findings obtained in this study and it was determined that more than half of the nurses had COVID-19 disease, did not find the PPE of sufficient quality, the working environment was not adequately ventilated, and orientation training was not provided to the nurses assigned from different areas. It was determined that more than half of the nurses were considering leaving their jobs during the pandemic, the majority of them were not satisfied with the employee health and safety policies and found the occupational safety measures taken to be partially sufficient. Nursing care is the most important investment in healthcare and, therefore has the greatest impact on patients. Since nurses form the backbone of the health system in the delivery of care services, it is essential to protect the health of nurses in more effective management of the pandemic. Nurses face extraordinary challenges when responding to unique, uncertain, and ever-changing situations around the world. Appropriate and effective strategies must be identified and implemented to protect nurses. Regulations to improve nurses' working conditions can reduce health risks and help strengthen healthcare response during a pandemic. There is a need for policies and practices specifically targeting the workplace health and safety of the nursing workforce during pandemics. The risks and dangers that cause work accidents and occupational diseases in health institutions should be determined, and employees should be protected by keeping them away from these risks and dangers. Regulations regarding "occupational health and safety" in health institutions should be implemented, and the continuity of these practices should be ensured during certain periods. These practices are important for health workers and also for the continuity of the quality of health services provided.

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The authors report that there are no competing interests to declare.

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### Author Contribution Rates

Design of Study: BA (%60), AD (%40)

Data Acquisition: BA (%100)

Data Analysis: AD (%60), BA (%40)

Writing Up: BA (%100)

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