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Determination of Nurses' Working Conditions and Occupational Safety Knowledge Level in the COVID-19 Pandemic Period

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ABSTRACT

Objective: This study was designed as a cross-sectional design in order to determine the working conditions and occupational safety knowledge levels of nurses during the pandemic process. Method: The sample of the study consists of 184 nurses who work actively in Gaziantep 25 December State Hospital, who are not on unpaid leave and maternity leave, and who voluntarily participated in the study. Results: It was seen that 70.7% of the nurses were women, 40.8% worked in services, 60.3% received training on occupational health and safety during the pandemic process, and 38% worked 48 hours or more per week. According to the findings, the maximum score that can be obtained from the scale was 270, the mean score of the nurses was 123.64±32.07, the highest score was obtained from the occupational diseases and complaints, and the lowest score was obtained from the accidents and poisoning subscales. Conclusion: It is necessary to establish an attitude towards occupational health and safety for nurses working in hospitals and to provide necessary legal regulations. Working hours should be regulated not to exceed 8 hours, hospitals should be inspected at regular intervals, occupational safety specialists should be made compulsory in hospitals, and working nurses should be screened for occupational diseases at certain intervals.

Keywords: COVID-19, Nurses, Occupational Health and Safety, Working Conditions.

Hemşirelerin COVID-19 Pandemi Sürecinde Çalışma Koşulları ve İş Güvenliği Bilgi Düzeylerinin Belirlenmesi

ÖZ

Amaç: Bu araştırma, pandemi sürecinde görev alan hemşirelerin çalışma koşulları ve iş güvenliği bilgi düzeylerini belirlemek amacıyla kesitsel olarak tasarlanmıştır. Metot: Çalışmanın örneklemini, Gaziantep 25 Aralık Devlet Hastanesinde aktif olarak çalışan, ücretsiz izinde ve doğum izninde olmayan ve çalışmaya gönüllü olarak katılan 184 hemşire oluşturmaktadır. Bulgular: Hemşirelerin %70.7'sinin kadın olduğu, %40.8'sinin servislerde çalıştığı, %60.3'ünün pandemi sürecinde iş sağlığı ve güvenliği (İSG) hakkında eğitim aldığı ve %38'inin haftalık 48 saat ve üzeri çalıştığı tespit edilmiştir. Bulgulara göre, ölçekten alınabilecek maksimum puan 270, hemşirelerin ölçek puan ortalamalarının 123.64 ± 32.07 olduğu, en yüksek puanın meslek hastalıkları ve şikayetler alt boyutundan, en düşük puanın kazalar ve zehirlenmeler alt boyutundan alındığı görülmüştür. Sonuç: Hastanelerde çalışan hemşireler için İSG'ne yönelik bir tutum oluşturulması ve gerekli yasal düzenlemelerin sağlanması gerekmektedir. Çalışma saatleri 8 saati geçmeyecek şekilde düzenlenmeli, hastaneler düzenli aralıklar ile denetlenmeli, hastanelerde iş güvenliği uzmanlarının çalışması zorunlu hale getirilmeli ve çalışan hemşirelerin belli periyotlarda mesleki hastalıklara yönelik taramaları yapılmalıdır.

Anahtar Kelimeler: COVID-19, Çalışma Koşulları, Hemşireler, İş Sağlığı ve Güvenliği.

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INTRODUCTION

COVID-19 is a disease similar to pneumonia, caused by a new corona virus that emerged in Wuhan, China in November 2019 (WHO 2020). When World Health Organization declared COVID-19, a new type of coronavirus, as a global pandemic on March 11, 2020, there was great concern about the severity and spread of the disease, as well as the social and economic problems it would cause. In addition to that, since the global spread of the SARS-CoV-2 virus which causes COVID-19, variants have emerged and been identified in many countries around the world (WHO 2020). In line with these circumstances, various suggestions were developed to control the virus and countries were required to take action in line with these suggestions (WHO 2020). Countries responded to this call of the World Health Organization and developed health and economic policies to prevent the spread of the pandemic immediately (Labrague & Santos 2020). From the beginning of the pandemic, healthcare organizations have faced some difficulties due to the limited information available on the disease, not being adequately prepared for emergencies, and the lack of appropriate medical and personal protective equipment (PPE) (Arnetz et al. 2020).

The emergence of COVID-19 has placed unprecedented pressure on countries' healthcare systems and brought a variety of challenges to the nursing workforce. Moreover, it has potentially affected nurses' work performance and mental health, and even put their lives at risk (Labrague and Santos 2020). During the pandemic, nurses have played an important role especially in infection prevention, infection control, isolation, containment and public health (Mo et al. 2020). In this process, COVID-19 has become one of the most important occupational diseases for nurses who have been in close contact with COVID-19 patients.

At the beginning of the pandemic, it was reported that many healthcare workers were infected and 22 of them died due to insufficient personal protective equipment in China (Wang et al. 2019). Due to the COVID-19 pandemic in our country, it was announced by the Turkish Medical Association on March 11, 2022 that over 100 thousand healthcare workers were infected and 553 healthcare workers died due to the coronavirus (TTB 2022). In 1950, the World Health Organization (WHO) and the International Labor Organization (ILO) mentioned the necessity of "maintaining and increasing the physical, mental and social well-being of employees in all occupations" in the context of occupational safety (Çelikkalp et al. 2016). As recommended by WHO, healthcare workers should follow current occupational safety and health procedures, not expose others to health and safety risks, and participate in occupational safety and healthcare trainings provided by the employer (Sudre et al. 2021; Ahmad and Osei 2021).

In addition, in recent studies in which the occupational health and safety perceptions of healthcare workers were investigated, it is seen that the psychological trauma experienced by the healthcare personnel with the global coronavirus pandemic created a mobbing-like pressure (Ayyıldız 2020), and there were significant increases in depression and anxiety levels compared to before the pandemic, and there were significant decreases in energy, positive well-being and general well-being levels (Çankaya 2020). In addition, it is seen that as the duration of professional experience of healthcare workers increases, OHS measures were ignored and not taken into account (Önder 2023) and the healthcare workers who are ready for work at a high level have a better command of OHS practices (Karasu 2023).

In this context, no research has been found in the literature examining the occupational safety and working conditions of nurses during the pandemic period. Therefore, in order to fill the gap in the literature, the aim of our study was to examine the occupational safety knowledge levels and working conditions of nurses of the COVID-19 pandemic.

MATERIAL AND METHOD

Research Design

The research has been designed as a cross-sectional descriptive study in order to determine the working conditions and occupational safety knowledge levels of nurses during the pandemic process.

Place and Time

The research was conducted in Gaziantep 25 December State

Hospital between January and May 2021.

Population and Sample

The population of the research consists of 310 nurses who were actively working in Gaziantep 25 December State Hospital and were not on unpaid leave or maternity leave. Without sample selection, the research was carried out with 184 (59%) nurses who agreed to participate in the research.

Restrictions of the Research

From the nurses in the research population, those who were on unpaid or maternity leave, those who could not participate in the research due to busy working hours due to the pandemic, and those who did not volunteer to participate in the research have not been included. The nurses who filled out the data collection form properly and completely were evaluated within the scope of the research. Research is limited to the place, time and population of the study.

Data collection tools

A questionnaire created by the researchers was used as a data collection tool in the study. The questionnaire form consists of two parts. The first part consists of 20 questions including sociodemographic and working conditions.

In the second part, the "Occupational Safety Scale for Healthcare Personnel Working in the Hospital", which is developed by Öztürk and Babacan (2012), has been used.

To measure the perception levels of nurses in terms of occupational safety. The Cronbach Alpha value is found to be 0.96. The scale consists of 7 sub-dimensions which are, Occupational Diseases and Complaints (F1), Health Screening and Recording Systems (F2), Accidents and Poisonings (F3), Supervisory Support and Approaches (F4), Inspection of Materials, Tools and Equipment (F5), Protective Measures and Rules (F6) and Suitability of Physical Environment (F7). The scale is a 6-point Likert type scale consisting of 45 articles. While "1" represents strongly disagree, "6" represents strongly agree. The minimum and maximum scores range between 45 and 270 in the scale. When the total score obtained from the scale is divided by the total number of items in the scale, the result ranges from 1 to 6 points. High points mean that occupational safety is provided, and low points mean that occupational safety issues are not provided (Öztürk and Babacan 2012). The Cronbach Alpha value of the scale in this research is found to be .907.

Collecting Data

Researchers collected the data through face-to-face interview between January and May 2021. They informed the working nurses about the aim of the research and the duration of completing the questionnaire. Researchers also informed the nurses that they do not have to write their names on the questionnaires and they obtained their verbal consent for their participation in the research.

Statistical Analysis

SPSS 25 package program was used in the analysis of the research. The normality of the variables was examined using the Kolmogorov-Smirnov test. Descriptive statistical methods (mean, standard deviation, etc.) were used in research analyses. Independent samples t-test was also applied to compare the scores of the scale and the variables. $p < .05$ significance level was taken as reference.

RESULTS

Table 1 shows the demographic characteristics and working conditions of the nurses participated in the research. 70.7% of participants are female. In the research, the rate of nurses between the ages of 26-35 is found to be 40.8%. 77.7% of the nurses have a bachelor's degree and 50.5% are married. Regarding the working time of the nurses, it is observed that 28.3% of them have been working between 1 year and 5 years. While 44% of the nurses work in 16-hour shifts, 38% of them work 48 hours or more per week. Regarding the clinics they work in, 40.8% work in the services, 31.5% in the intensive care units, 17.9% in the emergency service, and 4.9% in the operating rooms (Table 1).

In Table 2, 60.3% of the nurses stated that they received training on occupational health and safety during the pandemic. In addition, 29.3% of them stated that they had a work accident while working and 78.3% of them stated that they knew what to do in case of work accidents. 88% of the

nurses stated that they use personal protective equipment and 71.2% stated that they were informed about personal protective equipment. 74.5% of them stated that measures were taken regarding the workplace and safety in the services they work. 54.7% of the nurses stated that they adapted to the innovations taken to protect their health and safety, and 54.9% of them stated that they were informed about the risks that may occur in the workplace (Table 2).

Table 1. Demographic Characteristics and Working Conditions of Nurses

Variable		N	%
Gender	Male	54	29.3
	Female	130	70.7
Age	18-25	61	33.2
	26-35	75	40.8
	36-45	40	21.7
	46-55	8	4.3
Educational status	Vocational School of Health	8	4.3
	Associate degree	22	12
	Bachelor's degree	143	77.7
	Postgraduate degree	11	6
Marital status	Married	91	49.5
	Unmarried	93	50.5
Working time in the profession	Less than 1 year	49	26.6
	1-5 years	52	28.3
	6-10 years	38	20.7
	11-15 years	17	9.2
	16 and more	28	15.2
Work shifts	08-16 shift (8 hours)	33	18
	16-08 shift (16 hours)	81	44
	Irregular shift	70	38
Work durations	40 hours or less	12	6.6
	40-48 hours	102	55.4
	48 hours or more	70	38
Department	Service	75	40.8
	Intensive care	58	31.5
	Emergency	33	17.9
	Operating rooms	9	4.9
	Other	9	4.9
Total		**184**	**100**

Table 3 shows the statistical results of nurses' occupational safety scale and sub-dimension mean scores. The mean score of the nurses' occupational safety scale is 123.64 ± 32.07, the minimum score is 45, and the maximum score is 209. When

Table 2. Measures Regarding Occupational Health and Safety During the Pandemic Process

	N		%	
	Yes	No	Yes	No
Have you received training on Occupational Health and Safety during the pandemic process?	111	73	60.3	39.7
Have you had a work accident while working?	54	130	29.3	70.7
Do you know what to do in the case of work accidents?	144	40	78.3	21.7
Do you use Personal Protective Equipment (PPE)?	162	22	88	12
Were you informed before using PPE?	131	53	71.2	28.8
Are occupational health and safety measures taken in your workplace?	137	47	74.5	25.5
Do you think your workplace adapts to innovations in taking the necessary precautions to protect health and safety?	100	84	54.7	54.3
Does your workplace adequately inform you about the health hazards and other risks involved in your work?	101	83	54.9	54.1

the scale sub-dimension scores of the nurses are viewed, the mean score of the occupational diseases and complaints (F1) scale is 26.92 ± 9.6 and the minimum score is 13 and the maximum score is 61. The mean score of the nurses' health screening and recording system (F2) scale sub-dimension is 22.98 ± 7.19 with a minimum score of 6 and a maximum score of 36. The nurses' accidents and poisonings (F3) scale sub-dimension score average is 13.46 ± 5.92 with a minimum score of 5 and a maximum score of 27. Supervisory support and approaches (F4) scale sub-dimension score average of the nurses is 18.48 ± 7.65 with a minimum score of 7 and maximum score of 36. Inspection of materials, tools and equipment (F5) scale sub-dimension mean score is 16.73 ± 6.5 with a minimum score of 5 and the maximum score of 30. The mean score of the protective measures and rules (F6) scale sub-dimension is 19.37 ± 6.63 with a minimum score of 5 and a maximum score of 30. Suitability of physical environment (F7) scale sub-dimension mean score is 14.25 ± 5.78 with a minimum score of 4 and a maximum score of 24 (Table 3).

Table 3. Occupational Health and Safety Scale and Its Sub-dimensions Scores

Scale sub-dimensions	Maximum	Minimum	Average	Standard deviation	Cronbach's Alpha
Occupational Diseases and Complaints (F1)	61	13	26.92	9.60	.81
Health Screening and Recording Systems (F2)	36	6	22.98	7.19	.84
Accidents and Poisonings (F3)	27	5	13.46	5.92	.88
Supervisory Support and Approaches (F4)	36	7	18.48	7.65	.83
Inspection of Materials, Tools and Equipment (F5)	30	5	16.73	6.50	.88
Protective Measures and Rules (F6)	30	5	19.37	6.63	.90
Suitability of Physical Environment (F7)	24	4	14.25	5.78	.87
Total Scale Score	209	45	123.64	32.07	.90

When the mean score of the OHS scale and its sub-dimensions are compared according to the demographic characteristics of the nurses, statistically significant differences among the scale sub-items of "occupational diseases and complaints (F1)", "health screening and recording system (F2)", "accidents and poisonings (F3)" are detected with regard to gender (p = .031). A statistically significant difference is found among "Health screening and recording system (F2)", "supervisory support and approaches (F4)" "protective measures and rules (F6)", "suitability of physical environment (F7)" knowing what to do in the case of an occupational accident and total scale scores (p = .001). In addition, a statistically significant difference was found between those who took OHS precautions in the institution where they worked and the "health screening and registration system (F2)", "managerial support and approaches (F4)", "material, tools and equipment control (F5)", "protective measures and rules (F6)", "physical environment suitability (F7)" and "total scale scores" (p<0.05). In addition, when the scale and its sub-dimensions were compared with those who received training on OHS during the pandemic process, a statistically significant difference was found between "occupational diseases and complaints", "health screening and registration system", "managerial support and approaches", "material, tools and equipment control" and "protective measures and rules (Table 4).

Table 4. The Distribution of the Mean Scores of the OSM and Its Sub-Dimensions According to Demographic Characteristics of Nurses

Variable	F1	F2	F3	F4	0	F6	F7	Total
Gender								
Female Male	25.4±9.2 30.5±9.6 **P=.001***	23.8±7 20.9±7.1 **P=.013***	12.8±5.6 14.9±6.3 **P=.031***	18.1±7.4 19.2±8.1 P=.369	17.1±6.9 15.7±5.3 P=.181	20±6.4 17.6±6.6 **P=.022***	14.4±5.9 13.8±5.5 P=.581	131.7±31.9 132.9±31.8 P=.826
Do you know what to do in the case of a work accident?								
Yes No	27±9.5 25.9±9.3 P=.501	24±6.7 18.9±7.1 **P=.000***	13.7±5.8 12.5±6.2 P=.245	19.5±7.6 14.5±6.1 **P=.000***	17.1±6.7 15.1±5.5 P=.054	20.3±6.4 15.9±6.2 **P=.000***	14.6±5.9 12.7±4.9 **P=.040***	136.6±31.1 115.7±29 **P=.000***
Are occupational health and safety measures taken in your workplace?								
Yes No	27.2±9.9 25.4±8 P=.251	24±6.5 19.7±8 **P=.000***	13.4±5.8 13.6±6.1 P=.842	19.6±7.2 15±7.8 **P=.001***	18.1±6.1 12.6±5.7 **P=.001***	21.1±6.2 14.2±5 **P=.000***	15.4±5.6 10.9±4.7 **P=.000***	139.1±29.5 111.7±29.7 **P=.000***
Have you received training on occupational health and safety during the pandemic process?								
Received training Not received training	26.4±10 27.6±8.7	24.3±6.4 20.8±7.8	13.5±5.9 13.3±6.0	19.4±7.5 16.9±7.6	17.8±6.6 14.9±5.9	20.2±6.7 17.9±6.2	15±5.9 13.9±8.1	132.1±32.1 133.9±32.2
	p =.016*	**P=.001***	P=.764	**P=.027***	**P=.003***	**P=.020***	P=.301	P=.732

*p< .05

DISCUSSION

70.7% of the nurses participated in the research are female and 40.8% are between the ages of 26-35. Additionally, 77.7% of the nurses have bachelor's degree, 49.5% are married, 15.8% have occupational diseases, and 60.3% received training on OHS during the pandemic process. When the professional experiences of the nurses are viewed, it is determined that 28.3% of them have been working between one year and five years. In the study conducted by Öztürk and Bahçecik (2009), it was observed that while the average age of the nurses was 29.44±5.23, 50% of them were married and 41% of them had bachelor's degree (Bahçecik and Öztürk 2009). In the research conducted by Celikalp et al. (2016), it was determined that the age range of 49.4% of the nurses was between 31- 41. In addition, it was determined that 55.6% of the nurses received training on OHS and 43.2% had professional experience between 10 and 19 years (Çelikalp et al. 2016). In their study, Tüzüner and Özaslan (2011) stated that there were 34.2% health workers between the ages of 25-34, 23.3% had a bachelor's degree, and 45.8% had a professional experience of 10 years or more (Tüzüner and Özaslan 2011). Sarp and your friends (2018) found that 61.2% of the health workers were female, 63.1% were married, and 37.8% are nurses (Sarb et al. 2018).

Within the scope of this research, it is stated that the average score of the occupational safety scale of the nurses is not at a sufficient level (Table 4). Similarly, it is stated in the literature that hospitals are insufficient in OHS (Bahçecik and Öztürk 2009). On the other hand, there are studies stating that some hospitals are sufficient in terms of OHS (Öztürk et al. 2012). In the study conducted by Bahçecik and Öztürk (2009), it is stated that the health staff working in hospitals are insufficient in practices regarding OHS (Bahçecik and Öztürk 2009; Hailu et al. 2021). On the contrary, it has been reported that OHS practices are provided at a sufficient level in different studies. It is thought that the difference in the studies is due to the lack of implementation of an inter-institutional legal regulation regarding OHS practices and the lack of adequate inspection on OHS (Çelikkalp et al. 2016, Öztürk et al. 2012, Omar et al. 2021).

In the study, it was determined that there was a statistically significant difference between the "occupational diseases and complaints (F1)" sub-dimension according to gender and the status of receiving training on OHS during the pandemic process. It has been determined that there is a statistically significant difference between the "health screening and registration system (F2)" sub-dimension and gender, knowing what to do after an occupational accident, taking precautions for OHS in the workplace and receiving training on OHS during the pandemic process. It was found that there was a statistically significant difference between "accidents and poisonings (F3)", which is one of the sub-items of the OHS scale, according to gender. It has been determined that there is a statistically significant difference between the "managerial support and approaches (F4)" sub-dimension and the state of knowing what to do after an occupational accident, the workplace taking precautions for OHS and receiving training on OHS during the pandemic process. It has been found that there is a statistically significant difference between the "material and equipment control (F5)" sub-dimension and the workplace taking precautions for OHS according to the status of receiving training on OHS during the pandemic process. It has been found that there is a statistically significant difference between the "protective measures and rules (F6)" sub-dimension and gender, knowing what to do after an occupational accident, taking precautions for OHS at your workplace, and receiving training on OHS during the pandemic process. It has been determined that there is a statistically significant difference between Physical environment suitability (F7) sub-dimension and knowing what to do after an occupational accident and taking precautions for OHS in the workplace where you work. In the study, it was determined that there is a statistically significant difference between the OHS total scale score according to the status of taking precautions for OHS in the workplace. It has been observed that the studies on this subject are insufficient.

CONCLUSIONS

In this study, it is aimed to reveal the working conditions and occupational safety knowledge levels of nurses during the pandemic process. The result showed that occupational safety has been ensured in institutions, however, occupational

diseases and complaints have increased during the pandemic process. Improvements should be made especially in health screenings, supervisory support and approaches, inspection of materials, tools and equipment, protective measures and rules, as well as suitability of physical working environment. It turns out that the long working hours of nurses is one of the issues that need to be improved especially during the pandemic process. Working hours should be arranged not to exceed 40 hours per week. Additionally, an attitude towards OHS should be established in hospitals and necessary legal regulations should be provided. In this regard, hospitals should be inspected in terms of OHS at regular intervals and the employment of occupational safety specialists in hospitals should be made compulsory. Finally, it is important that working nurses are screened periodically for occupational diseases and observed by the fellow physicians. Researchers should guide politicians and other researchers by working with larger samples on the problems that nurses experience regarding working conditions and occupational health and safety.

AUTHOR CONTRIBUTIONS

Plan, design: SB, AA; Material, method and data collection: SB, AA, AS; Analysis and comment: SB, AA; Writing and critical evaluation: SB, AA.

CONFLICT OF INTEREST

The authors have declared no potential conflicts of interest regarding the research, authorship and/or publication of this paper.

FINANCIAL DISCLOSURE

This research has not been supported by any institution or organization.

THE ETHICAL ASPECT OF THE RESEARCH

In order to be able to conduct the research, written permission is obtained from a clinical research ethics committee of Artvin Çoruh University (Date (11.27.2020) No: E-18457941-050.01.04-12720). (Decision No: 2020/16) and institutional permission is obtained from the Health Directorate in the province the research was conducted (Date (01.26.2021) No: E-48230018-774.99). Permission to use the scale is also obtained from the person who developed the scale used in the research. Only nurses who volunteered to participate in the research are included and their verbal consent is obtained.

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