



Pandemic awareness and caring behaviors of nurses working in intensive care unit – a multicenter study

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ABSTRACT

Introduction and aim. In the COVID-19 pandemic, which is a global threat, the awareness levels of intensive care nurses who meet all the care needs of patients can affect the quality of care. In this study, pandemic awareness and care behaviors of nurses who undertook the patient's care needs in intensive care units were examined.

Material and methods. The research was carried out with 317 nurses working critical care units of 12 hospitals in different provinces. "Nurse Characteristics Form", "Pandemic Awareness Scale" and "Caring Behaviors Inventory-24" were used as data collection tools. Data were collected between March and August 2022 in the middle of the COVID-19 pandemic process using an online survey.

Results. It was determined that 75.4% of the participants were female and the mean age was 25.56 ± 4.49 . Pandemic awareness scale score was 3.04 ± 0.62 (0.11-3.67) and caring behaviors inventory score was 5.48 ± 0.84 (1.00-6.00). A significant, positive, weak relationship was found between nurses' pandemic awareness and all sub-dimensions of caring behaviors ($p \leq 0.05$).

Conclusion. It was seen that the caring behaviors of nurses with high pandemic awareness were also positively affected. Although it was the first time they had experienced the pandemic, nurses were found to have good caring behaviors.

Keywords. pandemic awareness, caring behavior, intensive care, nurse

Introduction

The coronavirus disease 2019 (COVID-19) pandemic, an unprecedented global epidemic, has spread to all continents worldwide, affecting various aspects of economic and social life, and has claimed the lives of millions of people.¹⁻³ However, the coronavirus pandemic has affected the whole world and has created such a great social impact, suggesting the need for attention and preparation against new infectious diseases that may arise at any time.⁴

The current pandemic moment, which imposes on humanity to raise awareness of behavioral changes related to social isolation/removal as well as preventive mea-

sures such as hand washing, personal and environmental hygiene, adequate nutrition for patients and hospital has revealed the importance of nurses' more qualified, ethical, technical and scientific roles every day. It is known that intensive care nurses are an indispensable element of the health army that fights on the front lines in times of crisis and epidemic diseases in environmental and humanitarian disasters, especially in the current pandemic.⁵ Disease conditions and life risks arising from COVID-19, as well as the working conditions to which health workers are exposed, the sickness of professionals and the inadequate functioning of care services are directly reflected in the quality of health care services pro-

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Received: 20.03.2023 / Revised: 8.04.2023 / Accepted: 11.04.2023 / Published: 30.06.2023

Demir BD, Türen S, Dogan DA. *Pandemic awareness and caring behaviors of nurses working in intensive care unit – a multicenter study.* Eur J Clin Exp Med. 2023;21(2):245–250. doi: 10.15584/ejcem.2023.2.18.



vided. Pandemics, a global health problem, are a threat to nurses and all other health workers.⁶ Intensive care nurses spend more time with patients and are directly responsible for patient care.⁷ Global health institutions are aware of the necessity of nursing care in their efforts to prevent and respond to epidemics, and underline that its importance is increasing day by day.⁸⁻⁹ Caring behaviors can be directly affected by the health care provider, organizational factors, nursing care delivery model and cultural differences based on common values in the society.¹⁰ For this reason, it is necessary to carry out studies to determine the factors affecting caring behaviors and care by taking into account the current conditions in each country.¹¹ Pandemics are a new experience involving the care of highly contagious patients, and little is known about it.⁵

Aim

In this study, pandemic awareness and care behaviors of nurses who undertook the patient's care needs in intensive care units were examined.

Research questions:

- What is the level of pandemic awareness of nurses working in intensive care?
- What is the level of care behavior of nurses working in intensive care?
- Is there a relationship between the awareness of the pandemic and care behaviors of nurses working in the intensive care unit?
- What are the factors affecting the awareness of the pandemic and care behaviors of nurses working in intensive care?

Material and methods

Ethical approval

In order to conduct a research, written ethics committee permission was obtained from Istanbul Arel University Ethics Committee Commission (E-69396709-050.01.04-208684 Number and Decision No: 08) and written institutional permission was obtained from the health group of the hospital where the research was conducted. The nurses constituting the sample of the study were informed about the purpose, duration and what was expected from them and approval was obtained for participation in the research in line with the principle of willingness and volunteerism. The data was created through Google drive during the pandemic, the survey invitation was given an online survey link via WhatsApp, making it clear that the participation was voluntary. The questionnaire response time was completed between 8-12 minutes. In this study, all procedures were performed in accordance with the ethical standards, and by the Helsinki Declaration.

Study design and participants

This study used a descriptive cross-sectional research design. The population of the study consisted of 564 nurses working in general intensive care, neonatal intensive care, cardiovascular surgery intensive care and coronary intensive care of 12 hospitals in different provinces within a special health group between 4.03.2022 and 04.08.2022. The sample was planned to include 306 nurses at a 99% confidence interval. 23 nurses did not want to participate in the study and 9 nurses filled the questionnaire incompletely. The research was completed with 317 nurses who volunteered to participate.

Data collection tools

In the study, "Nurse Characteristics Form", "Pandemic Awareness Scale" and "Caring Behaviors Inventory-24" were used as data collection tools.

Nurse characteristics form

In this form prepared by researchers; There are 12 questions to evaluate nurses' age, gender, marital status, education level, year of employment in intensive care, status of having an intensive care certificate, opinions on the reasons that may affect the care provided in intensive care and whether they are considering resigning during the pandemic.

Pandemic awareness scale (PAS)

The scale, which was developed by Arpacı (2022) and studied Turkish validity and reliability, is applied to 14-82 age groups. The score that can be obtained from the five-point likert type scale varies between 9 and 45. There are two inverse items on the scale (item 1 and item 3). The scale consists of a single sub-dimension and nine items. Clause 1 and Clause 3 are inversely coded. The Cronbach α value is 0.89¹². For this study, it is 0.74.

Caring behaviors inventory-24 (CBI-24)

Wu et al. CBI-24, which was developed by CBI-24, was conducted by Kurşun and Kanan in 2012 for our country.¹³ The scale consists of 4 subgroups and 24 items: assurance, knowledge and skills, respectfulness and connectedness. 6-point Likert-type scale (1: never, 2: almost never, 3: sometimes, 4: usually, 5: most often, 6: always) is used for the responses of CBI-24. For the scale and each sub-dimension, a score between 1-6 is obtained by dividing the score obtained by adding the scores of the items to the number of items Cronbach determined the coefficient as 0.97, while in this study it was determined as 0.99.¹⁴

Statistical analyses

Continuous variables are expressed as means \pm SD, and categorical variables are expressed as percentages. Baseline demographic and occupational characteristics of the groups were compared with Chi-Square or

Fisher exact test for categorical data and student's t test and one- way analysis of variance (ANOVA) for continuous variables. Relationship between variables analyzed by using Pearson correlation analyses. For all tests, two-sided P values $p < 0.05$ were considered significant. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 24.0 for Windows (SPSS Inc, Chicago, Illinois, USA).

Results

The mean age of the nurses participating in the study was 25.56 ± 4.49 (min.20-max.54). 75.4% of the participants were women, 73.2% were single and 72.2% were high school graduate nurses. Most of the nurses (69.1%) work in internal intensive care units (coronary, reanimation, general, COVID) and 70.7% had 1-5 years of working experience. 90.5% of the nurses stated that they worked willingly in intensive care units and 77.9% cared for 1-3 patients (Table 1).

Table 1. Nurse's socio-demographic and professional characteristics*

	n (317)	%
Age (years)		
20-24	187	59
25 and over	130	41
Gender		
Female	239	75.4
Male	78	24.6
Marital Status		
Married	85	26.8
Single	232	73.2
Education Status		
High school	229	72.2
License	83	26.2
Postgraduate (master's/doctorate)	5	1.6
Working year in intensive care		
1-5 years	224	70.7
6-10 years	72	22.7
11 years and over	21	6.6
Have an intensive care nurse certificate		
Yes	40	12.6
No	277	87.4
Willingly work in intensive care		
Yes	309	97.5
No	8	2.5
The ICU where he works		
internal medicine (coronary, reanimation, general, COVID)	219	69.1
Surgery (CVD, general surgery)	38	12.0
Neonatal ICU	60	18.9
Number of patients per nurse		
1-3 Patients	247	77.9
4 Patients and above	70	22.1
Thinking that the ICU has a sufficient number of nurses		
Yes	75	23.7
No	242	76.3
Sufficient time for ICU care		
Yes	174	54.9
No	143	45.1
Thinking about resigning		
Yes	103	32.5
No	214	67.5

* ICU – intensive care unit

As stated in Table 2, the average pandemic awareness score of nurses was determined as 3.04 ± 0.62 . The mean of the sub-dimension of nurses' nursing behavior assurance was 5.50 ± 0.86 ; knowledge skill sub-dimension average was 5.58 ± 0.83 ; the mean sub-dimension of respectfulness was 5.45 ± 0.75 ; the adherence sub-dimension average was 5.36 ± 0.89 and the total score average of caring behavior were 5.48 ± 0.84 .

Table 2. Nurse's pandemic awareness and care behaviors

	Mean ± SD (min.-max.)
PAS	3.04 ± 0.62 (0.11-3.67)
CBI-24	
Assurance	5.50 ± 0.86 (1-6)
Knowledge and skills	5.58 ± 0.83 (1-6)
Respectfulness	5.45 ± 0.75 (1-6)
Connectedness	5.36 ± 0.89 (1-6)
Total	5.48 ± 0.84 (1-6)

* Mean ± SD (min-max); PAS – pandemic awareness scale; CBI-24 – caring behaviors inventory-24

In Table 3, it was found that while the units where nurses worked did not make a difference in their caring behavior, they affected pandemic awareness ($p \leq 0.05$). The awareness level of nurses working in internal intensive care units was found to be higher than those working in surgical and neonatal intensive care units. It was determined that the fact that nurses had sufficient time for ICU care affected only the connectedness dimension from the sub-dimensions of the caring behaviors scale ($p \leq 0.05$). There was no significant difference between the fact that nurses did not have an intensive care nurse certificate, worked willingly in intensive care, the number of patients per nurse, the lack of sufficient number of nurses in the ICU, sufficient time for care, nurses did not intend to resign during the pandemic process, and the sub-dimensions of the caring behaviors scale and the mean scores of total caring behavior.

A significant, positive, very weak relationship was found between the pandemic awareness score average of nurses and all sub-dimensional scores of caring behaviors (Table 4) ($p \leq 0.05$).

Discussion

In this study, the relationship of intensive care nurses who provide care during the pandemic with pandemic awareness and caring behavior and some factors affecting it was examined. The results showed that nurses had high mean scores on the caring behavior and pandemic awareness scales and had good caring behavior. In the literature review, no similar study was found to discuss the results of this study, and it seems that this study is the first to address this issue. The pandemic that entered our lives with COVID-19 has adversely affected all our life behaviors. This research, which examines the awareness levels of intensive care nurses who are health care

Table 3. Factors affecting nurses' caring behaviors inventory and pandemic awareness *

	CBI-24										PAS	
	Assurance		Knowledge and skills		Respectfulness		Connectedness		Total		Mean ± SD	p
	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p	Mean ± SD	p		
Age (years)												
20-24	5.57±0.82	0.1	5.62±0.81	0.36	5.50±0.73	0.18	5.42±0.86	0.13	5.53±0.81	0.16	3.07±0.6	0.4
25 and over	5.41±0.9		5.53±0.85		5.36±0.77		5.27±0.94		5.40±0.87		3.01±0.65	
Gender												
Female	5.47±0.87	0.58	5.57±0.85	0.72	5.46±0.74	0.9	5.37±0.89	0.7	5.47±0.85	0.87	3.05±0.63	0.73
Male	5.55±0.81		5.61±0.77		5.45±0.77		5.32±0.91		5.49±0.81		3.02±0.6	
Marital Status												
Married	5.40±0.95	0.2	5.49±0.91	0.24	5.37±0.83	0.24	5.30±0.94	0.45	5.39±0.92	0.28	3.07±0.6	0.62
Single	5.54±0.82		5.62±0.8		5.48±0.71		5.38±0.88		5.51±0.81		3.03±0.63	
Education Status												
High school	5.54±0.78		5.61±0.76		5.47±0.71		5.40±0.82		5.51±0.77		3.04±0.59	
License	5.40±1.04	0.39	5.51±1	0.61	5.40±0.86	0.74	5.26±1.05	0.44	5.40±1.01	0.54	3.03±0.69	0.88
Postgraduate (master's/doctorate)	5.32±0.91		5.44±0.82		5.50±0.56		5.20±1.19		5.35±0.88		3.18±0.97	
Working year in intensive care												
1-5 years	5.54±0.81		5.61±0.79		5.48±0.71		5.40±0.85		5.52±0.8		3.06±0.6	
6-10 years	5.38±0.98	0.34	5.50±0.96	0.6	5.36±0.87	0.47	5.24±1.04	0.38	5.36±0.97	0.37	2.99±0.73	0.74
11 years and over	5.46±0.82		5.59±0.78		5.46±0.68		5.30±0.82		5.45±0.79		3.06±0.43	
Have an intensive care nurse certificate												
Yes	5.32±0.93	0.15	5.46±0.88	0.33	5.33±0.81	0.25	5.17±0.93	0.15	5.30±0.9	0.16	3.11±0.73	0.43
No	5.53±0.84		5.60±0.82		5.47±0.74		5.39±0.89		5.50±0.83		3.03±0.6	
Willingly work in intensive care												
Yes	5.50±0.86	0.64	5.58±0.84	0.68	5.45±0.75	0.80	5.35±0.9	0.54	5.47±0.85	0.57	3.04±0.62	0.61
No	5.64±0.38		5.70±0.4		5.52±0.49		5.55±0.41		5.64±0.36		3.15±0.59	
The ICU where he/she works												
Internal medicine (coronary, reanimation, general, COVID)	5.53±0.79		5.63±0.75		5.47±0.71		5.39±0.84		5.51±0.77		3.11±0.55	
Surgery (CVD, general surgery)	5.44±0.93	0.6	5.50±0.98	0.38	5.36±0.80	0.76	5.21±1	0.53	5.39±0.94	0.52	2.88±0.55	0.01
Neonatal ICU	5.42±1.04		5.48±1.00		5.42±0.85		5.34±1.02		5.41±1.00		2.90±0.83	
Number of patients per nurse												
1-3 Patients	5.48±0.91	0.41	5.55±0.89	0.19	5.44±0.79	0.43	5.35±0.93	0.77	5.46±0.89	0.39	3.02±0.65	0.31
4 Patients and above	5.57±0.61		5.70±0.58		5.52±0.6		5.38±0.75		5.55±0.61		3.11±0.51	
Thinking that the ICU has a sufficient number of nurses												
Yes	5.45±1.01	0.57	5.45±1.01	0.12	5.41±0.85	0.52	5.34±1.03	0.86	5.42±1	0.46	2.99±0.69	0.45
No	5.52±0.8		5.62±0.76		5.47±0.71		5.36±0.85		5.50±0.78		3.06±0.6	
Sufficient time for ICU care												
Yes	5.55±0.83		5.58±0.84		5.50±0.71		5.46±0.85		5.53±0.83		3.06±0.62	
No	5.45±0.88	0.3	5.59±0.82	0.89	5.39±0.79	0.19	5.23±0.93	0.02	5.42±0.85	0.25	3.02±0.62	0.6
Thinking about resigning												
Yes	5.41±0.92	0.18	5.54±0.84	0.53	5.41±0.81	0.48	5.28±0.91	0.29	5.41±0.88	0.30	3.08±0.58	0.39
No	5.54±0.82		5.60±0.82		5.47±0.72		5.39±0.88		5.51±0.82		3.02±0.64	

* significant difference at p<0,05; Bonferroni post-hoc analiz

practitioners, has an important advantage because it is the first research conducted in intensive care nurses in our country in terms of determining the level of awareness not only about COVID-19 but also about pandemic epidemics in general.

Table 4. The relationship between nurses' pandemic awareness and caring behaviors inventory

	PAS	CBI-24				
		Assurance	Knowledge and skills	Respectfulness	Connectedness	Total
		R	p	R	p	R
		0.162	0.152	0.144	0.17	0.178
		<0.001	0.001	0.001	<0.001	<0.001

* R – correlation coefficient; using Pearson's corelation analyses

Due to the limited literature on COVID-19 pandemic awareness, the results were discussed with similar research. Al-Dossary et al. in terms of of the awareness

level of nurses about COVID-19, 96.85% had excellent awareness about the virus.²⁵ In terms of preventive practice (awareness and skills) of nurses in dealing with COVID-19, 83.2% reported the highest prevention, while 38 (7.6%) had low prevention. More than half of respondents (60.4%) had a high positive attitude towards providing care to COVID-19 patients. Meanwhile, in terms of the perception of nurses towards COVID-19, more than half of the nurses (69.2%) had a very high perception. Several findings were highlighted in the study. The mean score of pandemic awareness of intensive care nurses was found to be high. When the results were examined, the awareness level of women was higher than that of men. The level of awareness of those who were married was higher than those who were single. As the level of training increased, the level of awareness of nurses increased. The awareness of nurses with a graduate education level was higher than that of nurses who graduated from undergraduate and high school. The level of

awareness of nurses who were between 1-5 years in terms of working years was higher than those who were 6-10 years, and those over 11 years. The awareness of nurses who had intensive care-specific training certificates was higher than those who did not. As the number of patients cared for by intensive care nurses increased, the level of pandemic awareness increased.

This study, the value obtained from the CBI-24 total score average of the intensive care nurses showed that their perceptions of caring behaviors were high. In a similar study conducted by Kızılırmak and Bulut, the total score of the scale was found to be 5.36 ± 0.5 . When the mean scores of nurses' caring behavior were examined in the study, the highest mean score was found in the knowledge-skill sub-dimension (5.58 ± 0.83) and the lowest mean score was in the sub-dimension of connectedness (5.36 ± 0.89).¹⁵ Efil et al. nurses' levels of caring behaviors were high (5.4 ± 0.6).¹⁶ Similarly, in studies conducted with nurses working in different units in the literature, it was seen that nurses got the highest score in the knowledge skill sub-dimension and the lowest score in the connectedness sub-dimension.¹¹⁻²⁴ However, in Gülpınar's study, the sub-dimension of being respectfulness and the sub-dimension of assurance in Şanal's study had the lowest average score.^{20,22} In the studies, it was thought that the reason for the higher sub-dimension score of knowledge and skills was the widespread specialization in nursing education and the years of experience of the nurses participating in the study were between 1-5 years.

In this study, intensive care nurses who provided care during the pandemic pointed to high knowledge and professional skills among nurses despite the conditions of the country's hospitals. This finding highlights the impact of having knowledge and awareness on caring behaviors. For this reason, it is necessary and recommended to develop nursing knowledge and practices through continuous education in order to empower nurses. In this study, it was expected that the pandemic awareness and caring behaviors of intensive care nurses would be very high. However, the findings showed that their behavior was good when it came to providing care to patients, especially COVID-19.

Study limitations

Although sampling was done with the consent of the staff, working environment conditions such as participants' workload, stress and fatigue can affect the quality of their responses. Future studies are proposed to clarify the relationship between research variables in the wider statistical population.

Conclusion

The findings showed that the pandemic that entered our lives with COVID-19 and the pandemic awareness and

caring behaviors of intensive care nurses who cared for very highly contagious patients were good. Despite these results, relevant managers need to pay special attention to awareness training of health professionals in order to improve their caring behaviors.

Acknowledgment

The authors sincerely thank all the nurses who participated in the study.

Declarations

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author contributions

Conceptualization, B.D.D., S.T. and D.A.D.; Methodology, B.D.D., S.T. and D.A.D.; Software, B.D.D. and S.T.; Validation, B.D.D. and S.T.; Formal Analysis, B.D.D. and S.T.; Investigation, B.D.D., S.T. and D.A.D.; Resources, B.D.D., S.T. and D.A.D.; Data Curation, B.D.D., S.T. and D.A.D.; Writing Original Draft Preparation, B.D.D. and S.T.; Writing – Review & Editing, B.D.D., S.T. and D.A.D.; Visualization, B.D.D., S.T. and D.A.D.; Supervision, B.D.D., S.T. and D.A.D.; Project Administration, B.D.D.

Conflicts of interest

The authors declare that there is no conflict of interest regarding this article.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval

In order to conduct a research, written ethics committee permission was obtained from Istanbul Arel University Ethics Committee Commission (E-69396709-050.01.04-208684 Number and Decision No: 08) and written institutional permission was obtained from the health group of the hospital where the research was conducted.

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