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Research Article

THE EFFECT OF PERSONAL PROTECTIVE EQUIPMENT USE ON NURSES' PERCEIVED INDIVIDUALIZED CARE IN THE COVID-19 PANDEMIC

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Abstract: *This research was conducted between January and March 2021 as a descriptive, cross-sectional and correlational study to determine the effect of personal protective equipment use on nurses' perceptions of individualized care during the COVID-19 pandemic. The population of the study consisted of 130 nurses working in the COVID-19 clinics of a university hospital in a province in the east of Turkey, and the sample consisted of 127 nurses who agreed to participate in the study. Data were collected using the personal information form and the Individualized Care Scale-Nurse version A. While there was a statistically significant relationship between nurses' gender, education level, and the mean total score of the Individualized Care Perception Scale-Nurse A version ($p<0.05$), no significant relationship was found between them and other variables ($p<0.05$). Despite the increasing workload, it was determined that the long-term use of personal protective equipment during the COVID-19 pandemic did not affect the perception of individualized care and the caregiver role of professional nurses.*

Keywords*: COVID-19; individualized care perception; nurse; personal protective equipment.*

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1. Introduction

"COVID-19", defined as a disease that reasons severe pneumonia in Wuhan, China, is seen as a unique and major public health problem globally. In addition, it has a heavier meaning for nurses due to heavy working conditions and infection [1]. The World Health Organization (WHO) called the virus a pathogenic 2019-nCoV virus and declared it a pandemic in March 2020 due to its pandemic effects across the World [2-5]. The rapid transmission and spread of COVID-19 have created a high risk for all health professionals, especially nurses, who care for and treat these patients and are in contact with the patient, in terms of COVID-19 transmission and illness. Due to its rapid transmission and spread, nurses should take maximum droplet/contact isolation measures to have a high level of protection when they encounter patients with suspected or confirmed COVID-19 positif [1,2]. Healthcare workers have started to use personal protective equipment (PPE) including disposable 3M or N95 respirators, goggles, full face shields, liquid-resistant aprons, double-layer gloves, and protective shoes, and increased their frequency of hand hygiene during the pandemic [2,6,7]. Studies have reported that PPEs used for protection from infectious diseases cause adverse effects in healthcare workers, including headaches, deterioration of personal health and performance, mood worsening, symptoms associated with pressure in the ear and nose, and stress [8-10]. In addition to the risk of infection, healthcare professionals suffer from physical and mental fatigue, difficult triage decisions, and loss of patients and colleagues during the COVID-19 pandemic [11-13]. Nursing is a profession to provide holistic and humanistic care for

physiological and psychosocial needs and existing or potential problems of patients or healthy individuals [14,15]. It has been reported that nurses take the burden of patient care and responsibility quickly and successfully, even in emergency situations, despite difficult and critical conditions [16]. Every person has a different experience, value, culture, and background, making them different from other individuals. These features should be taken into account in the delivery of nursing care. Here, individualized care, which is considered a key point of nursing practices, comes to the fore. By reflecting the nursing belief in human worthiness, uniqueness, and singularity, this care increases nursing care quality, contributing to patient satisfaction [17,18]. For this reason, it is necessary to ensure and maintain individuality in nursing care. Studies show that the perception of individualized care is high in nurses despite the difficulties brought by modern health service delivery [19-21]. During the pandemic process, the workload of nurses increases and affects individualized care, which is an important element of patient care and satisfaction [12,22-24]. Nurses live with anxiety due to intense workloads and infection risks. Although it is difficult for them to put on and take off PPE, whose use/wearing for a long time causes a lot of additional burdens, nurses have to use PPEs in order to protect themselves, their loved ones, and other healthcare workers. These additional burdens cause burnout in nurses and negatively affect individualized care. In this regard, this study was conducted to determine the effect of personal protective equipment use on nurses' perceived individualized care during the COVID-19 pandemic.

Research Questions:

1. Does the use of personal protective equipment for a long time to be protected during the COVID -19 pandemic process affect the nurses' perception of individualized care?

2. Materials and Methods

2.1. Study Type

This study was conducted to determine the effect of personal protective equipment use on nurses' perceived individualized care in the COVID-19 pandemic. This study is descriptive and cross-sectional.

2.2. Study Place and Time

The study was conducted between January and March 2021 at the COVID-19 clinics of a university hospital in an eastern province of Turkey.

2.3. Study Population and Sample

The population of the study consisted of 130 nurses working in the COVID-19 clinics of a university hospital in an eastern province of Turkey. No sampling method was used in the study in order to reach all nurses in the COVID-19 clinics. However, the study was completed with 127 nurses, as two were on leave and one did not want to participate in the study. The personal protective equipment nurses used were medical or N95/FFP2 masks, eyes or face shields, gowns/overalls, caps, gloves, and disposable foot protectors/shoe covers.

Study Inclusion Criteria*;* (1) being a nurse aged 18 years and over; (2) agreeing to participate in the study; (3) working in Covid-19 clinics; (4) using PPE.

Study Exclusion Criteria; (1) being on leave during the time of the study; (2) not agreeing to participate in the study; (3) having a psychiatric diagnosis; (4) working in a clinic other than COVID-19 clinics; (5) not using PPE at all or using only one PPE.

2.4. Data Collection Tools

The data were collected using a personal information form and the Individualized Care Scale (ICS-A).

2.4.1 Personal Information Form

The form consisted of a total of 6 questions about the nurses' characteristics such as age, gender, education level, marital status, and professional experience [21, 25, 26].

2.4.2 Individualized Care Scale- Nurse A (ICS-A)

The Individualized Care Scale-Nurse A Version was developed by Suhonen et al. (2011) and its Turkish validity and reliability study was performed by Acaroğlu et al. (2011). The scale, which is a 5-point Likert type, scores from 1 to 5. It consists of a total of 17 items and 3 subscales, including clinical status, personal life status, and decision-making control over care. A high score on the scale indicates that nurses have a higher level of support for the individuality of their patients during the care they provide. The highest and lowest total scale scores are 85 and 17, respectively [17,27]. According to the Turkish validity and reliability study conducted by Acaroğlu et al., the Cronbach alpha internal consistency coefficient of the scale was found to be 0.92 [17]. In this study, the Cronbach Alpha internal consistency coefficient was found to be 0.93.

2.5. Data Evaluation

The data were analyzed using the SPSS 21.0 package program. The demographic data were presented using the number, standard deviation, percentage, mean, minimum, and maximum values. The Kruskal-Wallis test, the independent t-test, and Pearson's correlation analysis were used for the analysis of the data.

3. Results

Of the nurses included in the study, 35.4% were aged between 18-25 years, 42.5% were male, 44.1% were married, 56.7% had a bachelor's degree, and 52% had a professional experience of 5 years or less. The nurses' ICS-A total mean score was 3.86 ± 0.75, and their subscale mean scores were 4.09 ± 0.78 for Clinical Situation, 3.53 ± 0.92 for Personal Life Situation, and 3.86 ± 0.75 for Decisional Control Over Care. The nurses' mean duration of PPE use (min/day) was 344.02 ± 154.19 (min) (Table 1).

Table 1. Distribution of nurses according to their descriptive characteristics (n=127)

Descriptive Characteristics	Number	%
Age		
Between 18-25 years	45	35.4
Between 26-30 years	43	33.9
≥ 31 years	39	30.7
Gender		
Female	73	57.5
Male	54	42.5
Marital status		
Married	56	44.1
Single	71	55.9
Education level		
High school degree	32	25.2
Associate degree	23	18.1
Bachelor's degree	72	56.7

Table 1. Continued.

Descriptive Characteristics	Number	%
Professional experience		
≤ 5 years	66	52.0
6-10 years	44	34.6
≥ 11 years	17	13.4
	Min-Max. Score	**Mean±SD**
ICS-A and Subscales		
Clinical Situation (1-7)	1.00-5.00	4.09±0.78
Personal Life Situation (8-11)	1.00-5.00	3.53±0.92
Decisional Control Over Care (12-17)	1.00-5.00	3.98±0.88
ICS-A Total (17)	1.00-5.00	3.86±0.75
Duration of PPE Use (min/day)	120-520	344.02±154.19

No statistically significant difference was found between the nurses' ICS-A total and subscales mean scores with respect to age, marital status, and professional experience (p> 0.05). However, a statistically significant relationship was found between their gender, education level and ICS-A total mean scores (p <0.05) (Table 2).

Table 2. Comparison of nurses' ICS-A subscales mean scores according to descriptive characteristics

Descriptive Characteristics	ICS-A Subscale Mean Scores (X±SD)			
	Clinical Situation	Personal Life Situation	Decisional Control Over Care	ICS-A total
Age				
Between 18-25 years	4.12±0.86	3.42±0.96	.81±0.97	3.78±0.82
Between 26-30 years	4.00±0.75	3.62±0.84	4.15±0.70	3.92±0.61
≥ 31 years	4.11±0.72	3.57±0.97	3.97±0.94	3.88±0.80
Test and significance	KW=1.159 p=0.560	KW=1.125 p=0.570	KW=2.776 p=0.250	KW=0.525 p=0.769
Gender				
Female	4.27±0.62	3.68±0.90	4.13±0.65	4.03±0.59
Male	3.82±0.89	3.34±0.93	3.77±1.09	3.64±0.88
Test and significance	t=3.146 p=0.001	t=2.066 p=0.041	t=2.348 p=0.020	t=2.942 p=0.004
Marital status				
Married	4.13±0.79	3.54±0.97	3.99±0.93	3.88±0.78
Single	4.02±0.77	3.53±0.87	3.96±0.82	3.84±0.71
Test and significance	t=-0.796 p=0.428	t=-0.024 p=0.981	t=-0.136 p=0.892	t=-0.339 p=0.735
Education level				
High school degree	3.74±0.91	3.18±0.99	3.63±1.03	3.52±0.89
Associate degree	4.28±0.64	3.50±0.91	3.99±0.76	3.92±0.57
Bachelor's degree	4.16±0.72	3.70±0.87	4.13±0.82	4.00±0.69
Test and significance	KW=7.133 p=0.028	KW=6.037 p=0.049	KW=7.138 p=0.028	KW=7.499 p=0.024
Professional experience				
≤ 5 years	4.09±0.78	3.56±0.90	3.91±0.89	3.85±0.74
6-10 years	4.06±0.77	3,53±0.86	4.06±0.80	3.88±0.68
≥ 11 years	4.10±0.82	3.46±1.20	4.04±1.09	3.87±0.95
Test and significance	KW=0.102 p=0.950	KW=0.093 p=0.954	KW=1.683 p=0.431	KW=0.085 p=0.959

In addition, no statistically significant relationship was found between the nurses' ICS-A total and subscales mean scores and duration of PPE use ($p > 0.05$). Therefore, the duration of PPE use did not affect nurses' perceived individualized care (Table 3).

Tablo 3. The relationship between nurses' ICS-A and subscales mean scores and duration of PPE use

ICS-A and Subscales	Duration of PPE Use(min)	
	Test (r)	p
Clinical Situation	0.034	0.734
Personal Life Situation	0.023	0.794
Decisional Control Over Care	0.128	0.152
ICS-A total	0.072	0.423

4. Discussion

This study was conducted to determine the effect of personal protective equipment use on nurses' perceived individualized care in the COVID-19 pandemic.

In our study, the nurses' ICS-A total item mean score was 3.86 ± 0.75. Their subscale mean scores were 4.09 ± 0.78 for clinical status, 3.53 ± 0.92 for personal life status, and 3.98 ± 0.75 for decision-making control over care. Considering that the highest item-total mean score on ICS-A is 5.0, the nurses had a good level of perceived individualized care. Can and Acaroğlu found the nurses' ICS-A total item mean score as 3.88 ± 0.66, and determined their subscale item mean scores as 4.09 ± 0.62 for clinical status and 3.36 ± 1.03 for personal life status, and 3.98 ± 0.74 for decision making control over care [25]. Studies have reported similar ICS-A total and subscale mean scores of nurses to those in the present study [26-29]. Although there is no significant relationship between the long-term use of PPE, which we associate with the pandemic process and heavy workload, and nurses' perception of individualized care, it is seen that the sub-dimension of nurses' ICS-A score average is clinical status.

In this study, no statistically significant relationship was found between the nurses' age and ICS-A mean score. Similar studies have indicated that age does not affect individualized care perception [20, 28-31]. It is an expected result that the age of nurses is not affected by professional values. With the perception of individualized care, which is a result of the therapeutic relationship between the nurse and the patient, it is seen as a professional value that the life of the individual is valued and that individual care is given accordingly [31]. The present study found no statistically significant relationship between the nurses' marital status and ICS-A mean scores. Similar to the result of our study, some studies have reported that marital status does not affect individualized care perception [20,28]. However, Avcı and Yılmaz found that marital status affected individualized care perception [31]. The perception of individualized care is a perception that includes therapeutic communication and makes the patient to be seen as valuable and unique. For this reason, it is expected result that their marital status does not affect this perception.

In the present study, there was no statistically significant relationship between the nurse's professional working year and individualized care perceptions. Suhonen et al. also support this result of our study [29]. However, different from the results of our study, some studies found that years of nurses' professional work affected individualized care perception [20,30,31]. The fact that the majority of the nurses participating in this study had less than five years of professional experience may have contributed to this result.

This study determined a statistically significant relationship between the nurses' education level and ICS-A total mean scores. In parallel with the results of our study, studies have found that education level affects nurses' perceived individualized care [29,31,32]. However, different from the results of our study, some studies have reported that the education levels of nurses did not affect their

individualized care perceptions [28,31]. In Turkey, nursing education has been given only at the undergraduate level in recent years. However, high school and associate degree nursing graduates who are still actively working continue to work. This result shows that individualized care is provided when the nursing profession is performed by undergraduate nurses equipped with professional values, even in times of crisis in the world.

This study determined a statistically significant relationship between the nurses' gender and ICS-A total mean scores. Although there are studies showing that gender does not affect nurses' perceived individualized care [20,29,30]. There are also studies showing that gender affects nurses' individualized care perceptions [28]. It is seen that the mean score of female nurses is higher than the mean score of male nurses. It is thought that the responsibility of care as a social role imposed on women in Turkey is effective in this result.

No statistically significant relationship was found between the nurses' ICS-A total and subscales mean scores and duration of PPE use. Although there are several studies on PPE use by healthcare professionals, there are no studies addressing the effect of PPE use on individualized care perception [7-10]. In this respect, our study is the first study in this field.

Studies have reported that excessive workload and lack of a suitable environment affect nurses' individualized care [32,33]. We found that PPE use did not affect nurses' perceived individualized care, this may be because a large part of our sample consisted of undergraduate nurses and undergraduate nursing education made an important contribution to the nursing profession. In fact, Can and Acaroğlu (2015) reported a highly significant positive correlation between the nurses' total and factor mean scores on the Professional Values Scale and their item mean scores on the Individualized Care Scale and subscales [25]. Suhonen et al. argue that individualized care perceptions are a new concept that has received global attention and has been adopted in the literature [27]. This professional perception may also be the reason why wearing PPE for a long time does not affect the nurses' individualized care perceptions.

5. Conclusion

This study found that age, marital status, and professional experience did not affect nurses' perceived individualized care, but gender and education level affected their individualized care perceptions. In addition, no significant relationship was found between the nurses' ICS-A total and subscales mean scores and duration of PPE use.

Despite the increasing workload, it shows that the long-term use of PPE during the COVID-19 pandemic does not affect the perception of individualized care and the caregiver role of professional nurses. It is recommended to conduct studies on whether the long-term use of PPE by nurses affects their professional nursing roles.

Limitations

This study includes only the nurses working in COVID-19 clinics, therefore its results cannot be generalized to all nurses. As another limitation, this study covers nurses who have used PPE for different durations. The study has also some strengths. It assessed nurses' perceived individual care and duration of PPE use by using data collection tools with proven validity and reliability.

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Ethical Dimension of the Research: For conducting the study, ethical approval was obtained from the Clinical Research Ethics Committee of a university on January 05, 2021 (Number: 1/13), written institutional permission from the university hospital, Where the study was conducted, and written and

verbal consents from nurses who agreed to participate in the study. The research was carried out in accordance with the principles of the Helsinki Declaration.

Compliance with Research and Publication Ethics: This study was carried out by the rules of research and publication ethics.

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Study design: LZA, AD, LY
Data collection: LY, AD
Data analysis: LZA
Study supervision: LZA, AD
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