

ORIGINAL ARTICLE

Evaluation of Status of Getting ill with SARS CoV-2 and the Knowledge of Using and Attitudes of Personal Protective Equipment at Pre-Hospital Emergency Care Services Employees

Hastane Öncesi Acil Sağlık Çalışanlarının COVID-19 Enfeksiyonu Geçirme Durumları ile Kişisel Koruyucu Ekipman Kullanımı Hakkında Bilgi ve Tutumlarının Değerlendirilmesi

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NOTE:

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ABSTRACT

Objective: The present study aimed to evaluate the knowledge level of healthcare personnel working in pre-hospital emergency care services in Konya province regarding the coronavirus disease 2019 (COVID-19) infection and the use of personal protective equipment (PPE) during the pandemic.

Material and Methods: A total of 410 healthcare personnel working in pre-emergency care services in Konya province were included in the study. The data were collected through a questionnaire developed by the researcher inquiring about the demographic data, whether they caught (COVID-19) or not, knowledge about COVID-19, and knowledge and attitudes regarding the use of PPE.

Results: The rate of individuals who experienced mild infection was 27.1%, and those who experienced severe disease were 5.6%. It was determined that 83.7% of the healthcare personnel were using PPE. The most commonly used PPE were gloves (90.8%), and the least were visors and eyeglasses (43.8%). When the frequency of the COVID-19 symptoms was analyzed according to age, the symptoms were more frequent in the age group of 40 years and above, and the symptom frequencies were seen to increase with age.

Conclusion: It was concluded that the healthcare personnel had received in-service training about COVID-19 and had sufficient knowledge. The rate of PPE use was high, and there was no difference between males and females in catching COVID-19 infection.

Keywords: COVID-19, SARS-CoV-2, Personal protective equipment, Pandemics

ÖZ

Amaç: Bu çalışmanın amacı Konya ili hastane öncesi Acil Sağlık Hizmetlerinde görev yapan sağlık personelinin, pandemi sürecinde Covid-19 enfeksiyonu ve kişisel koruyucu ekipman kullanımı ile ilgili bilgi, tutum ve davranışlarını incelemektir.

Gereç ve Yöntem: Bu çalışmaya Konya ili Acil Sağlık Hizmetlerinde görev yapan 410 sağlık personeli dâhil edildi. Veriler araştırmacı tarafından hazırlanan; demografik bilgileri, Covid-19 geçirip geçirmediğini, Covid-19 bilgisi ve KKE (Kişisel Koruyucu Ekipman) bilgi ve tutumlarını sorgulayan bir anket aracılığıyla toplanmıştır.

Bulgular: Araştırmaya katılan bireylerden Covid-19 enfeksiyonunu hafif geçirenlerin oranı %27,1, ağır geçirenlerin oranı %5,6 olarak belirtilmiştir. Sağlık personelinin %83,7'si KKE kullandığını belirtmiştir. Personelin eldiven, tulum/önlük, N95/FFP3 maske, cerrahi maske ve siperlik/gözlük kullanım oranları sırasıyla %90,8; %65,4; %64,4; %62,4 ve %43,8 olduğu bilgisine ulaşılmıştır. Sağlık personelinin yaşlarına göre COVID-19 semptom görülme sıklığı incelenmiş, 40 yaş üstü personelde semptomların daha sık görüldüğü belirtilmiştir. Yaşın artmasıyla semptomların görülme sıklığının arttığı gözlemlenmiştir.

Sonuç: Sağlık personelinin Covid-19 hakkında hizmet içi eğitim aldığı ve yeterli bilgiye sahip olduğu ayrıca KKE kullanım oranlarının yüksek olduğu sonucuna varılmıştır.

Anahtar Kelimeler: Covid-19, SARS-CoV-2, kişisel koruyucu ekipman, pandemi

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was first identified in Wuhan, China, in 2019 (1). Coronaviruses (CoV) are single-strand positive chain RNA viruses that belong to the coronavirus species of the Coronaviridae family (2). Coronaviruses are a large virus family, which may lead to mild infections such as the common cold or severe infections such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory

Syndrome (SARS) (3). The incubation period is 2-14 days, and contamination occurs via droplets, contact, and aerosols, and also from asymptomatic individuals (4). According to South Korea's and Germany's data, most infections are transferred from asymptomatic subjects (5, 6). SARS-CoV-2 has affected the whole world in a short time due to its rapid and easy transmission. The first case was detected in Türkiye at the beginning of March 2020 (7).

The whole population is susceptible to COVID-19 infection and the healthcare workers are the group with the highest risk. The studies on the working perception of healthcare workers during pandemics emphasize the importance of using PPE to feel safe and ready (8). In a study from China, healthcare workers were said to be protected from infection when they were provided a proper PPE and proper training about PPE use, including "protective clothes, masks, gloves, face visors and coveralls" (9).

With this study, we aimed to detect the deficiencies, make recommendations, and contribute to the literature about knowledge and education regarding COVID-19, skills, and attitudes toward PPE use among healthcare providers during pandemics when these issues are of great importance.

Material and Methods

Study Design and Population

A cross-sectional model was used for the study. The study was conducted on healthcare personnel working at pre-hospital emergency care services in the province and districts of Konya. The sample consisted of 410 health personnel (physician, ambulance and emergency care technician (AECT), emergency medical technician (EMT), health officer, nurse, and midwife) who were working at the emergency care services centers, logistic units, and command and control center (CCC) of Konya Province Ambulance Services Directorate. After having obtained the required permissions from the Scientific Researches Committee of the Directorate-General for Health Services (date:15.09.2020/number:2020-09-14T20 08 53), Konya Provincial Directorate of Health (date:10.11.2020/number:86737044-806.01.03), the ethics committee approval had been obtained from Selcuk University Medical School Non-interventional Clinical Researches Ethics Committee (date:30.09.2020/number:2020/18), and verbal consents were obtained from volunteer participants.

The data were collected through face-to-face interviews. The questionnaire form developed by the researchers included 33 questions inquiring about socio-demographic information (gender, age, title, working experience, educational status, the unit where s/he worked, etc.), whether s/he got COVID-19, knowledge about COVID-19 and PPE. The questions in the survey consist of both yes/no and multiple-choice questions. Open-ended questions were not asked in the survey. All questions were analyzed according to the answers given by the personnel participating in the survey.

Statistical Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 21.0 software. The statistics of health personnel were given as frequencies and percentages. The associations between the categorical variables were analyzed using the chi-square test. The ANOVA test and the t-test were used for the comparison of the means. A p-level of <0.05 was accepted as statistically significant.

Results

The demographic characteristics, titles, educational status, and working units of the participants are presented in Table 1. No statistically significant relationship was observed between gender infected with COVID-19 (p>0.05) (Table 2). A statistically significant difference was determined between the symptoms and age (p<0.05). When the symptom differences were analyzed according to age, the signs were more frequent among individuals 40 years and above (p<0.05) (Table 3). Gloves were found as the most frequently used PPE (90.8) when making an intervention or transferring the patient, and visors/eyeglasses were the least used PPE (43.8%) (Table 4).

Table 1. Distribution of socio-demographic details of healthcare personnel.

Details	n	%	
Sex, n (%)	Female	223	54.4
	Male	187	45.6
Age (years), n (%)	20-30	146	35.6
	30-40	193	47.1
	>40	71	17.3
	Physician	10	2.4
Participants, n (%)	AECT	144	35.1
	EMT	211	51.5
	Other	45	11.0
	0-5	35	8.5
Work experience(years), n (%)	5-10	153	37.3
	10-15	143	34.9
	>15	79	19.3
Educational level, n (%)	High school	36	8.8
	Associate degree	174	42.4
	Bachelor degree	177	43.2
Working Unit, n (%)	Post-Graduate degree	23	5.6
	Station	338	82.4
	CCC	64	15.6
Status of Receiving In-Service Training for Covid-19, n (%)	Other	8	2.0
	Yes-face to face	19	4.6
PPE usage, n (%)	Yes-online	378	92.2
	No	13	3.2
Total	Yes	343	83.7
	No	3	.7
Total		410	100.0

AECT: Ambulance Emergency Care Technician

EMT: Emergency Medical Technician

CCC: Command Control Center

Table 2. COVID-19 infection status findings by sex.

No	Don't know	Suffering from COVID-19 Infection				Total	x ²	p
		Yes (mild)	Yes (severe)					
Sex	Female	n	117	31	61	14	223	
		%	55.5	47.7	55.0	60.9	54.4	
Sex	Male	n	94	34	50	9	187	1.675
		%	44.5	52.3	45.0	39.1	45.6	.643
Total	%	n	211	65	111	23	410	
		%	51.5	15.9	27.1	5.6	100.0	

Table 3. Multiple comparison of the incidence of symptoms according to age of healthcare personnel with COVID-19 infection.

Age	Age range	Mean Difference	p-Value
20-30	30-40	-.17702	.524
	>40	-.86475	.000
30-40	20-30	.17702	.524
	>40	-.68773	.003
>40	20-30	.86475	.000
	30-40	.68773	.003

Table 4. Rates of PPE used by healthcare professionals when intervening/transferring patients with a contagious disease.

PPE	n	%
Gloves	179	90.8
Surgical mask	123	62.4
N95/FFP3 mask	127	64.4
Overalls/apron	129	65.4
Visor/eyeglasses	106	43.8
Total	197	100

Discussion

COVID-19 significantly affected health services worldwide; a remarkable increase in demand for healthcare services, and the need for PPE and its importance increased. Despite being the group with the highest risk for exposure and contamination with the virus, the lack of studies in the literature investigating the knowledge and attitudes of health personnel about COVID-19 infection and PPE use has urged us to carry out this study, and it was aimed to contribute to the literature. In such a time when the knowledge and attitudes of health personnel are of great importance, our study, which was conducted with 410 healthcare workers, has obtained data about the ability of participants about COVID-19 infection and PPE, the attitudes toward PPE use, education about COVID-19, and being infected with COVID-19 through a questionnaire. The finding that the education rates about COVID-19 and PPE were high and the personnel had sufficient knowledge, and the vast majority of the personnel were using PPE despite it being complicated and restrictive was promising.

Studies investigating the working perception of healthcare workers during the pandemic emphasize the importance of PPE education to feel safe and ready (8). In a study conducted in Henan in 2020, it was stated that 89% of healthcare workers had sufficient knowledge about COVID-19 infection (10). Healthcare workers reported that they had difficulty providing services when using PPE and putting on and taking off the PPE. They stated that blurred eyeglasses were challenging when performing procedures such as intubation and anesthesia (11). Healthcare workers remarked additional worries about PPE such as communication difficulty, physical disturbance, fatigue, restriction, heat, and dehydration. They reported continued providing care despite the high number of patients and short break time (9). In our study, when the PPE used by the personnel when intervening in patients with a contagious disease was examined, the rate of PPE use was observed high. According to the results of our study, we can state that although PPE is complicated and restrictive, most

health personnel prefer to use them and thereby try to protect themselves and their environment from the risk of contamination.

When the COVID-19 in-service training status of the health personnel participating in our study was evaluated, we found that 96.8% received (online or face-to-face) training. We suggest that the high rate of in-service training resulted from their having completed their in-service training, and from the institutions to which the personnel is affiliated directing the health personnel to receive training.

Healthcare workers are the group with the highest risk for COVID-19 infection. In a study from Italy, 20% of healthcare workers who provided care for COVID-19 patients were infected within the first two months (12). In a study from Spain, 419 out of 4393 COVID-19 patients (9.5%) were healthcare workers (13). In a survey conducted in the USA in 2020, the rate of healthcare workers was 5.9% among 6760 COVID-19 patients (14). In our study, the rate of subjects who had a mild COVID-19 infection was 27.1% (n:111) and the rate of those who had a severe infection was 5.6% (n:23). We suggest that healthcare workers are at greater risk than the general population for infection and contamination.

In our study, no statistically significant relationship was determined between gender and contracting a COVID-19 infection ($p>0.05$). In a study from Türkiye, 48% of positive cases reported were male (15). The rates of males and females were reported close in similar studies (16). Many studies in the literature support our findings; however, different results may have arisen from sample characteristics, sample size, and methodologies. While different data are available for the COVID-19 pandemic by gender, they mostly show an equal number of cases between the genders. Still, the evidence suggests that male death rates are higher (17).

The COVID-19 pandemic has caused many people to become infected and many people to die worldwide, but the most commonly affected were the middle-aged and elderly individuals. A study conducted in Brazil in 2020 reported that 131 out of 2070 individuals (6.3%) who tested positive for COVID-19 died, and 1939 people (93.7%) survived. The mortality risk was higher for elderly people and those with comorbidities (18). Elderly individuals are more likely to become infected due to physiological changes that occur with age and underlying health conditions (19-21). In a study including 140 community-infected COVID-19 patients, most of the patients were reported as middle-aged and elderly (22). When the difference in symptoms according to age groups of the health personnel who participated in our study and had a COVID-19 infection was examined, it was observed that the symptoms were more common when personnel over 40 had COVID-19 infection compared to other age groups. The incidence of symptoms increased as the age increased ($p<0.05$) (Table 4). Since our study included personnel working in the emergency healthcare system, an assessment could not be made

of those over 65. Despite those explained above, the result obtained in our study supports the studies in the literature, and it was observed that the symptoms of the elderly personnel were more severe ($p < 0.05$). Old aged adults also have additional factors, including malnutrition, comorbid conditions, decreased mucosal barrier efficiency, loss of the cough reflex and physical changes in the urinary tract (23). It can be stated that the older the age, the higher the adverse effects and risks of diseases (20). While some studies on the incidence of symptoms parallel to our analysis, others have shown different results. The change in the prevalence of the symptoms of COVID-19 with increased age and the fact that the participants in our study were younger adults may explain the difference in the incidence and course of symptoms. Furthermore, in some questionnaire studies, asking the symptoms with open-ended questions may make it difficult to remember all the symptoms at the first stage. We suggest that writing down the frequently seen symptoms in items made it easier to place them in our study.

Conclusion

According to the survey results, we can say that healthcare personnel over the age of 40 infected with COVID-19 had more symptoms. We may also say that the personnel received in-service training and had sufficient knowledge about COVID-19 infection and PPE; they preferred using PPE to protect themselves, their environment, and patients from contamination risk and continued to provide care to patients.

Ethics Committee Approval: Ethical approval for this study was obtained from the Scientific Researches Committee of the Directorate-General for Health Services (date:15.09.2020/number:2020-09-14T20 08 53), Konya Provincial Directorate of Health (date:10.11.2020/number:86737044-806.01.03), Selçuk University Medical School Non-Interventional Clinical Researches Ethics Committee (date:30.09.2020/number:2020/18).

All authors declared that they follow the rules of Research and Publication Ethics.

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Authors' Contribution: All authors contributed to the conception, design of the study, data collection, data analysis, and assembly. The manuscript was written and approved by all authors.

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