

## ORIGINAL RESEARCH



# Coping with difficulties faced in pre-hospital healthcare amid pandemics

Sarper Yilmaz<sup>1,\*</sup>, Gizem Sebahat Çoban<sup>2</sup>, Figen Unal Colak<sup>3</sup>, Ozgur Karcioğlu<sup>4</sup>

<sup>1</sup>Department of Emergency Medicine, University of Health Sciences, Kartal Dr. Lutfi Kırdar City Hospital, 34865 Istanbul, Turkey

<sup>2</sup>Department of Educational Administration, Cyprus Science University Faculty of Educational Science, 99320 Kyrenia, Turkish Republic of Northern Cyprus

<sup>3</sup>Department of Communication Design and Management, Faculty of Communication Sciences, Anadolu University, 26470 Eskisehir, Turkey

<sup>4</sup>Department of Emergency Medicine, University of Health Sciences, Istanbul Education and Research Hospital, 34098 Istanbul, Turkey

**\*Correspondence**

sarperyilmaz08@gmail.com  
(Sarper Yilmaz)

**Abstract**

EMS (Call number: 112 in Turkey) encompasses services provided by professional healthcare teams in case of diseases and injuries emerging acutely, accessed expediently following the event, using specialized equipment as necessary. The main purpose of this study is to determine the difficulties faced by 112 pre-hospital healthcare workers (HCWs) in the transfer of patients to hospital, during the COVID-19 pandemic period, and to examine ways to cope with these difficulties, with a case study method that examines unique cases. The study group of the research consists of Emergency Medical Technicians (EMTs) (n = 15; 30.6%), paramedics (n = 19; 38.8%) and doctors (n = 15; 30.6%). The forty-nine participants who comprise the study group were selected from 'HCWs who worked in the ambulance service during the transportation of patients with COVID-19 to hospital'. Based on the narratives of the participants, two main themes were determined as difficulties experienced and strategies of coping with these difficulties. Under the theme of difficulties experienced, three subthemes and a total of thirty-one codes were created as problems originating from society, the system and the employee himself. The theme of the strategies used to cope with the difficulties experienced was determined under three subthemes; professional equipment and personal precautions, professional measures and system support. A total of twelve codes were created. The pandemic period has been a time when boundaries and durability have been questioned. The experience obtained during this period is a great knowledge base for future global and mass epidemics, attacks and disasters.

**Keywords**

Pre-hospital; Healthcare workers; COVID-19; Difficulties; Coping strategy

## 1. Introduction

Pre-hospital emergency healthcare workers (PEHW) provide first and emergency intervention every day dealing with cardiac arrest, physical trauma, work and home accidents, falls, dyspnea, alcohol poisoning, births and psychiatric issues. They also provide healthcare support in cultural and sporting events, mass events, and operations carried out by law enforcement officers, and they are expected to be able to cope with these chaotic or dangerous scenarios without losing their composure [1]. COVID-19 became one of the largest epidemics after the 1918 Influenza epidemic and has had devastating effects on all segments of society. It has had serious economic, social, political and cultural consequences on societies, and this impact is likely to continue in the future. However, on the other hand, this pandemic has been a great experience for administrators to see the strength and weakness of healthcare systems and to improve stronger systems [2].

At the beginning of the period in particular, the only power in the hands of countries against the disease that did not have a vaccine or medicine was their healthcare systems and the num-

ber, quality and ability of healthcare workers (HCWs). The origin of the disease, the necessary measures, the policies to be determined and the response of societies are the most discussed issues of the period. Additionally, it is an indisputable fact that the HCWs who are those who feel the severity of this pandemic the most, and have never stopped their fight since the first COVID-19 case emerged in China.

It is known that the history of Emergency Medical Services (EMS) goes back thousands of years. The first example of these can be shown as the transportation of injured people on the battlefield during wars in Egyptian, Greek and Roman civilizations about 5000 years ago. The history of the EMS has been based on battlefields, and the healthcare service, which is always at the forefront in all mass society effects, such as warfare, disasters and pandemics, has been provided by them. PEHW is a vital component of healthcare, public health, public safety and disaster response systems [3]. These periods facilitate an understanding of the importance of pre-hospital systems or EMS in the USA, Europe and other continents, and the orientation of investments within this structure.

Since the beginning of 2021, the 112-call service has been

used for all emergencies and ambulance services in Turkey. EMS in Turkey has experienced great changes and developments in the last twenty years. While there were 481 EMS base stations throughout the country in 2002, this number reached 2466 in 2017 and, as of 2020, there were 112 EMS stations, more than five thousand ambulances, and more than thirty-four thousand personnel in our country [4].

The increase in PEHWs is important in terms of complying with national and international rules and successful management of the pandemic in order to manage the disease period well. As there are numerous points to be considered in regional planning and delivery of healthcare services to patients, the requirements and rights of HCWs should not be ignored.

The main purpose of this study is to examine the difficulties faced by PEHW in the transport of patients to hospital during the COVID-19 pandemic, and to determine strategies to cope with these difficulties. Within the scope of this study, the problem of the research was determined as, ‘What are the difficulties and coping strategies experienced by PEHWs during the transport of COVID-19 patients to hospital?’. Within this context, the research aims to emphasize the difficulties experienced by the PEHWs who first contact the patient during the COVID-19 pandemic process, and to guide the HCWs who will work during this epidemic period.

## 2. Methodology

### 2.1 Research model

The approach of the research is further suitable for the case study model, which was carried out with an examination of unique cases. Case studies may involve close examination of people, topics, and problems. A case study, according to Creswell, is a qualitative research approach in which a limited situation of the researcher over time and themes related to the situation are defined [5].

### 2.2 Research participants

The study group of the research consists of Emergency Medical Technicians (EMTs) (n = 15; 30.6%), paramedics (n = 19; 38.8%) and doctors (n = 15; 30.6%). The forty-nine participants who composed the study group were those who agreed to take part in the study within the one-month data collection period, and who were ‘healthcare workers who worked in ambulances during the transport of COVID-19 patients to hospital’. While a total of forty-five participants were targeted, the number of volunteers who are willing to be interviewed increased. The PEHWs included in the study consist of forty-nine people, of which 40.8% (n = 20) were male and 59.2% (n = 29) were female. The ages of the patients ranged from twenty-two to fifty-nine. Only 73.5% (n = 36) of these were under thirty years of age. A total of 85.7% (n = 42) PEHW were graduates of a public university and 14.3% (n = 7) of a private university. As far as their working years, this varied between five months and seventeen years, and 73.5% (n = 36) had at least three years experience. Working hours varied between 155–288 hours in a month. Almost half of the participants (n = 24; 49%) were working in Istanbul. Other PEHWs worked in provinces in various geographical regions of Turkey.

## 2.3 Data collection and analysis

Ethical permission was obtained from the Cyprus Science University in 1 March, 2021 (No: 202127). Interviews with forty-nine people constituting the sample were conducted online due to the pandemic conditions and data was collected approximately six months after the epidemic emerged in the Republic of Turkey (11 March, 2020) between 2020–2021. Within the scope of the research, data collection was carried out with a structured interview form. The questions in the structured interview form provided by the researcher were determined by a literature review and other requirements. The form used as a data collection tool in the research was evaluated by three different experts in the field, receiving its final form as a result of pilot interviews with two individuals.

Written and verbal consent was obtained from the participants before starting the interviews. Code names were used to protect the privacy of the participants. Throughout the research, EMTs were coded with the letter (E), paramedics (P) and doctors (D), and they were numbered according to the date of the interview (E1, E2, E3, P1, P2, P3, D1, D2, D3, and so on.).

It is suitable for research to classify the obtained information for certain themes and to analyse it in a way that the reader can understand. In this research, thematic analysis was ordered in the phases of coding the data, finding the themes, organizing the themes and codes, defining and interpreting the findings [6]. As a result of the interviews conducted in the research, forty-three pages of data from EMTs, sixty-seven pages from paramedics, fifty-nine pages from doctors, with a total of 169 pages being received, and the analysis started. The data obtained within the scope of the analyses was examined under two themes and, additionally, notable cases were discussed under a fourth heading. Care was taken to confirm the data obtained during the research period, the results and the comments obtained by the researcher with the participants. Interview questions were piloted and the interviews were recorded. The codes of the research were determined by transferring these transcripts into descriptive index tables. At this stage, empty descriptive index tables were assigned to an expert who was requested to derive codes. The codes of the researcher were compared with the codes of the expert and the reliability of the research was confirmed. The codes emerging from the data and the themes including the codes are presented in table form under the Results heading.

While calculating the reliability of this study, codes by the researcher and the expert that were found to be similar were accepted as an ‘Agreement’ and those that were different were described as a ‘Disagreement’. The numbers of ‘Agreement’ and ‘Disagreement’ codes were determined, and the reliability of the study was calculated using the 1994 Miles and Huberman [7] formula: [Reliability = Number of agreement / (Number of agreement + disagreement)]. The Reliability was found to be 89%.

## 3. Results

The study has two main objectives. The first one is the difficulties experienced by PEHWs during the pandemic period,

and the second goal is to enlighten the strategies of coping with these challenges.

### 3.1 The difficulties experienced

The theme of the difficulties experienced has three separate sub-themes, which are shown as the cause of the challenges. The difficulties experienced are divided into social problems, personal problems and system-related problems.

#### 3.1.1 Social problems

Heading the difficulties experienced by PEHWs during the COVID-19 period, problems that are closely related to society are among them. Within the scope of this sub-theme, the codes that emerged as a result of the analyses related to social problems, and why these codes were determined, are presented in Table 1.

Social problems, or the reactions of individuals in society to events, may vary according to cultural experiences. Within this context, HCWs have faced many problems with the most extreme focus of these being the unconsciousness of people. Within this context, it can be seen in the example given by E1 of the participants that there is not enough awareness regarding the disease. COVID positive and negative individuals living in the same house continue their lives without masks in the same environment.

One of the significant problems experienced by HCWs is that they are isolated from society. This period did not last for only a few months, but it was observed that HCWs were isolated from society for more than a year. This isolation manifested itself as obstacles in the use of social areas in certain places and even to not selling houses to HCWs.

One of the obvious conditions in society is the overburdening of HCWs and the health system by the public, their unnecessary occupation, and the reckless behaviour of people toward HCWs. The main reason for this behaviour is that there is a system where patients can complain to HCWs as they wish. While the patients and their relatives were able to reach hospital by their own means, they frequently called the HCWs and the 112 teams to their homes requesting transfer.

The other significant problem experienced during the pandemic period is undoubtedly that people have become used to the existence of COVID-19. Rather than accepting life with the disease, patients and other people have normalized it, relaxed preventative measures, and do not give due importance to hygiene and masks. There is even denial that disease exists in certain parts of society. This relaxed attitude by some places more workload on the shoulders of HCWs.

At the beginning of the epidemic, the additional payments and salary increases to be received by the HCWs were announced in the press by site managers. Although this salary increase has actually been brought into practice as low wages, it was introduced in the press and in statements as twice the normal salary; the public made statements and acted assuming that HCWs received high salaries and that they had to do every type of work because of these salaries. In this period, it was seen that certain products and services were provided in large amounts, especially to HCWs.

#### 3.1.2 Personal problems

The codes of personal problems experienced by PEHWs during the COVID-19 pandemic period are presented in Table 1.

PEHWs stated that they have mostly experienced personal problems during the COVID-19 pandemic period, psychologically, and stated that they also struggled with diseases caused by this situation. HCWs stated that they caught the disease in this period despite precautions being taken.

Among the personal problems of PEHWs, many problems, such as allergies, inability to work comfortably, breathlessness related to protective equipment used within the scope of COVID-19 measures were mentioned. The use of materials suitable for their own health while performing their duties is also an important issue in this sense.

One of the most important difficulties in transporting patients to hospitals is to ensure that the patient on the stretcher is safely put into the ambulance. PEHWs, who sometimes descend stairs and sometimes enable obese patients to be transported, also expressed experiencing these problems during the COVID-19 period. As the reason for its particular mention, it has been revealed that the relatives of the patients would normally help with transportation, but they are not now allowed to help because of COVID-19 restrictions. Apart from this, HCWs stated that they could not even find time to eat due to factors such as excessive fatigue, hours of work, and the number of patients. This exhaustion, insomnia and various other factors have led HCWs becoming aggressive.

The most frequently-mentioned issue by the doctors among the HCWs is an inability to spare enough time for the studies in the literature. Although these complaints are not encountered by paramedics and EMTs, doctors want to support current studies and to improve their knowledge regarding the disease.

#### 3.1.3 System-based problems

The problems caused by both the system and the management during the COVID-19 pandemic period are collected under this theme, with their codes being shown in Table 1.

Although a number of the system-related problems were solved by the time the data was collected, COVID-19 has become an important obstacle for HCWs during the pandemic period. Due to the lack of materials and the unpredictability of the epidemic, sufficient supplies could not be made available, and this was reflected in the economical use of existing materials by the HCW.

One of the problems experienced by healthcare teams is that disinfection processes are carried out by PEHWs, resulting in both a loss of time and intense exhaustion during this period. Cleaning procedures using disinfectants are repeated after each patient. This caused harm to instruments inside ambulances. As a situation imposed by the management system, travelling in the same area with a COVID positive patient put the HCWs at unnecessary risk, even though the patient may have been in good health and was only being transferred.

Certain expectations and fears from 112 PEHWs of the health system and their managers during the difficult times have been identified. These are that necessary value is not given to HCWs, their personal rights are not fully provided for, and the measures in place do not cover such personnel.

**TABLE 1. The codes related to subthemes.**

Subthemes	Codes of themes	Code explanation
Social Problems	Lack of support from patient relatives	Paramedic and EMTs, particularly women, have difficulty in carrying the patient. Relatives of the patients cannot help during the transportation.
	Excess of misinformation	They practise misleading information regarding treatments to themselves and they make HCWs responsible for these.
	Antivaccination	They do not want to be vaccinated because they think that if they are vaccinated, they will receive a deadly chip in their brain and spread the disease.
	Patient privacy	Relatives of patients put pressure on HCWsto prioritise their needs.
	Lack of empathy	Relatives of patients do not empathize with HCWs and treat themlike slaves.
	Fear in society	The fear of dying from the disease, increases aggression.
	Negative reactions of patients' relatives	Most of the difficulties experienced during transportation of the patients are based on the reactions of the patients or their relatives.
	Social exclusion	HCWs were not allowed to use elevators and other common areas in the buildings that they were living in during the period.
	Society's ignorance	The increase in the number of cases is the consequence of the reckless presence of the public in common areas.
Personal problems	Hesitancy	PEHWs often experienced this feeling initially with all patients, whether they were diagnosed with COVID-19 or not.
	Sleeplessness	It was mentioned as a health problem during the period.
	Inability to access current data	As professional development, not being able to update scientific publications on the disease due to workload was perceived as a problem.
	Fear of contracting COVID-19	All participants experienced the fear of contracting COVID-19.
	Loss of weight	Overwork and poor organization of eating times.
	The fear of bringing COVID-19 home	PEHWs living with their families were worried about bringing the disease home, especially to older family members.
	Being infected by COVID-19	Most of the participants stated that they were sick.
	Feeling aggressive	PEHWs stated that they felt aggressive due to excessive stress, and stated that this situation harmed their relationships with people.
	Anxiety	This has been described as a disease. There have been those who have started medication and therapy to overcome this.
	Intention to resign	There were those who thought of quitting the job, but resignation was prohibited by the government during this period.
Feeling inadequate	PEHWs have a feeling of inadequacy due to disease and various social and professional problems.	

**TABLE 1. Continued.**

Subthemes	Codes of themes	Code explanation
System-related problems	Lack of protective equipment	At the initial phase of the pandemic, there was a shortage of adequate protective equipment.
	Bureaucracy tardiness	Procurement of materials to be utilised for diagnosis, examination and treatment take a long time due to bureaucracy.
	No COVID-19 testing at home	Testing at home was not allowed.
	Extremely intense overnight shifts	Break times during overnight shifts are not planned correctly.
	Unqualified contact teams	There was a quality problem at the beginning of the mission of the contact teams.
	Unfair distribution of payments	There were problems between the personnel in the determined additional wages and payments.
	Neglect of Non-COVID-19 Diseases	With the directions, 112 teams considered diseases other than COVID-19 as less important.
	Ambulance disinfection	Since the disinfection of vehicles started from a single center, time was wasted.
	Limitation of medication	No updates have been made in medical stocks.
	Inadequateness of intensive care units	Due to the increase in the number of cases, intensive care units were found to be insufficient.
Professional Advices	Limited number of teams	There was a lack of teams to reach the cases.
	Ensuring life safety	HCWs emphasized that they should protect their own lives first.
	Removing authority limitations	It has been advised that burdens on the system will be alleviated when the authority limits of 112 PEHWs are expanded.
	Being prepared	It was emphasized that preparations should be made for future pandemics.
	Raising public awareness	Public awareness activities and public service announcements should be expanded.
	Normalization of measures	It is not beneficial to take extreme measures.
	Following new research	It is advisable that all HCWs support new publications and literature.
System Supports	Passion to serve the country	Participants should be happy to serve their nation on behalf of their state in such a difficult time.
	Establishing contact tracing teams	The establishment of contact tracing teams in the later stages of the pandemic has alleviated the burden of 112 ambulance teams.
	Initiative in outpatients	There was a case of taking the initiative in not bringing patients with controlled health conditions to the hospital.
	CCC Function	The CCC (Command Control Center) began to work more systematically.
	Turkish Medical Association	It supported the personal rights of doctors and HCWs.
	Psychological support	The Ministry of Health provided psychologist to support HCWs.

The collapse of the health system is one of the situations that personnel fear most.

All of the HCWs stated that the duration and number of shifts they worked were excessive. Participants P11 and P4 stated that they did not have meal breaks during their shifts and that they could not meet their basic needs.

The HCWs who worked in the 112 services required ambulance teams to have the authority to make the first examination and COVID-19 test. Through this process, they stated that every patient need not be transported to hospital due to the workload of the HCWs. This is a system issue. The transfer to hospital situation has been abused by society.

Frequently-mentioned condition by the PEHWs are restrictions such as cancellation of permission by administrators, being prohibited from requesting a report or from resigning. All of the HCWs have been forced to work regardless of this, and even those who valued their work were overwhelmed by such requirements.

The time expected for ambulances to go to the next case after they have transported the current case is extremely short. In this case, there is a lack of understanding regarding the pandemic conditions and preparation times. This has been suggested as a system problem that requires review.

## 3.2 Strategies for coping with such difficulties

The second theme, the strategies of coping with these difficulties, has three subthemes; professional equipment and personal precautions, professional advice and system support.

### 3.2.1 Professional equipment and personal precautions

There are two codes that appear under the theme of professional equipment and personal precautions. The code of 'cleaning vehicles and devices' appears as a precaution that HCWs focus on the most, and they also feel obligated to do this type of work even if it is not included in the system. The 'psychological support' code is also dominant for this sub-theme. The reason for this started when HCWs encouraged each other during the period.

One of the participants, E2, stated that he had conducted research on COVID-19 before hand and knew about the treatments in the whole process as a precaution. In this process, it is important for HCWs to be qualified and to follow the literature in terms of human health and the health system.

PEHWs have started to take measures to reduce contamination in ambulances. One of these measures was that, during the transfer of patient information and identity, contact was avoided.

During the COVID-19 pandemic, all HCWs were careful to improve themselves and be protected against the unknown disease. In this period, each member of personnel developed their own learning method. While a number of them supported the literature, other HCWs took care to gain experience in the field. Within this context, due to the workload, the HCWs did not have the opportunity to teach each other.

One of the measures taken covered disinfection methods. Due to the fact that disinfection work takes a lot of time, the

teams found a solution by purchasing a disinfecting device. The cost of this device was also equally collected from the personnel involved.

### 3.2.2 Professional advices

The codes of the data regarding the advice given by the HCWs regarding the system and their colleagues are presented in Table 1.

In the suggestion that addressed material deficiencies, which were identified as one of the most important problems at the beginning of the COVID-19 pandemic period, it was advised that the equipment should be constantly updated in warehouses.

The most prominent advice to the PEHWs working in ambulances was to ensure their own life safety. In this suggestion, made by E2, it is emphasized that HCWs can help more people as long as they are alive, and not putting the health of society to one side.

The participants, who also gave various pieces of advice against the system, made suggestions on the creation of units to be teamed up, especially in the case of a recurrence of pandemic conditions in the future. It is also within the scope of the advice that field personnel should be ranked. If these suggestions are implemented, commitment to the profession will also increase.

Education is important in terms of increasing the knowledge and awareness of society. In this context, it has gained importance both to increase the consciousness of the society during the pandemic period and to increase the knowledge of the students studying in this department in high schools.

### 3.2.3 System supports

The system and administrators of the Ministry of Health have commenced studies to solve the problems. The codes developed within the scope of this theme are given in Table 1.

The management of the Ministry of Health realized that their personnel were going through a difficult period, and a team of psychologists was established in order to make the period easier for them to cope with these stressful and emotional difficulties. HCWs were satisfied with this and benefited from the service.

The HCWs were satisfied with the controlled processing, planning and maintenance of the system by the chief physician. Even though this system was not diligently planned and controlled in every region, it provided a great advantage in regions where the practices were performed regularly.

The Ministry of Health has organized hotels that offer accommodation at certain points for HCWs who do not want to stay at home with their families or who do not want to infect others during the COVID-19 pandemic period. These complimentary stays have provided convenience for most HCWs over this period.

Disinfection problems that each participant specifically mentioned were resolved after the first difficult months. During this period, although a number of the healthcare teams acquired their own disinfection devices, with the development of the system, a disinfection device was designated to each team, preventing time wastage. Additionally other material problems were also solved.

## 4. Discussion

Goyal *et al.* [8], while updating the ‘Prehospital Triage of Acute Stroke Patients’ guideline, report a goal to best review the period, and update the guide in many aspects. They state that their goal is to be used in all future epidemics transmitted by droplets [8]. In this environment, where the guides are even targeting the next pandemics and developing updates, we think that compiling the experiences, problems and solution proposals of the PEHWs working at the sharp end of society will guide future pandemics and form the basis of all guides.

First of all, in this period, another situation that should be known, as well as the vaccines, medications, COVID-19 positive patients, and the intensive care occupancy rate, is the number of COVID-19 positive HCWs. The pandemic was a period in the world where HCWs were ‘made as if they cared’. As is understood from a number of studies, although there are HCWs with a high rate of COVID-19 positive, the general situation has not been managed dynamically, either in Turkey or the world in general [9, 10].

PEHWs identified three main sources for the difficulties experienced during the COVID-19 pandemic period (theme 1) as problems originating from society, personal problems, and the system. The first of these, the approach of society to the disease, is where the patient and the HCWs face one of the greatest problems of the period. According to Montesó-Curto *et al.* [11], many administrators around the world define this period using military and sharp metaphors such as ‘war’ in order to influence society to struggle in difficult times, such as the pandemic; for instance, in Italy and in the USA. Turkey was one of the countries that managed the period with such metaphors. The fact that the first of the problems experienced originated from society itself clearly shows that this administration has not sufficiently adapted to the situation.

During the pandemic period, all of the HCWs who were not mentally or physically healthy could not function adequately, as is the vaccine that cannot produce antibodies. During the COVID-19 period, the workload of PEHWs has increased. In addition, society’s reaction to the pandemic and the administrators was reflected in violence against HCWs [12]. In fact, in a number of studies conducted, two out of three HCWs report that they were exposed to violence during the pandemic period [13].

These problems even led the HCWs to question themselves and also to suggest knowledge, learning and more precautions as effective coping strategies for the situations they see themselves in as the source of difficulties.

Another main problem (subtheme 3) is caused by administrators and the system. The methods developed by countries fighting with the same pandemic by deriving different strategies are the main determinants of achievement or failure. Different countries managed this period differently due to a number of factors, such as administrators, society, politics and the economy [11].

It is clear that all the problems faced in society during the pandemic period are the first to be overcome and PEHWs were more likely to be harmed by this condition. It is known that the number of PEHWs in ambulances has not been enough during the pandemic period [14, 15]. Ambulance teams had difficulty

in finding a hospital where they could deliver patients, and long ambulance lines were seen in front of hospitals [16, 17]. The reason for this can be shown as the fact that not every hospital serves as a pandemic hospital. The findings are similar to previous studies carried out. In addition, the home test method suggested by HCWs to reduce unnecessary use of ambulances was successfully achieved in London [18]. This method has not been practised in many countries, including Turkey, and instead, contact tracing has developed. However, in the initial period, it could not close the gap in the system, including contact tracing, and could not reach all patients. The findings obtained for the purposes of the research show that during the COVID-19 pandemic period, PEHWs were working hard to meet the requirements of society, they worked long shifts, and their psychology was affected negatively. Within the scope of these findings, it is observed that ambulances are seen as a means of general transportation to hospital by society and that they are unnecessarily busy, and society is not adequately aware of the pandemic conditions. In addition, when the strategies of coping with difficulties are determined, it is revealed that HCWs try to support each other, struggle to protect their personal rights, and do their best in terms of providing essential materials.

In a study conducted by Ebadi *et al.* [19] on PEHWs before the pandemic, it is argued that the best coping strategy is positive coping, and that it has four main components; ‘positive feedback’, ‘crisis management’, ‘talent’, and ‘love of the job’. However, the negativity in social and physical life imposed by the pandemic disease renders these components inadequate, as understood in the present study [19]. Focusing on the problem, identifying the problem well and advising solutions have been accepted in the literature as the best coping strategies. It has been shown that the use of problem-focused coping strategies, especially in HCWs, tends to be associated with lower stress levels [20]. As revealed in many studies, high stress can cause emotional reactions, such as impotence, shortness of breath, difficulties in cognitive decision-making and management, and anger in PHEWs in emergency situations [21–23]. This is one of the issues that should be accomplished in the first place. In fact, in literature studies conducted during the pandemic period, the stress factor was found to be much higher than in HCWs than in society. In literature reviews, it can be seen that healthcare teams around the world are trying to cope with similar problems. Various coping strategies to handle stress and anxiety arising due to the COVID-19 pandemic have been developed for PEHWs. Although many studies have determined that there already are coping strategies, such as limiting the use of social media, sharing more information in assignments, changing the method used, and self-sacrifice in the fight against COVID-19, in our study, passion to serve humanity and the country is a commonly-used coping strategy [24].

The personal protective equipment work performed during the pandemic period can be divided into two parts. The first type was more frequent at the beginning of the period. While not being able to access personal protective equipment has been the biggest problem of the period, the compatibility of health workers and society with personal protective equipment in the countries that can provide it has led to debate. During this

period, our study participants state that while they had to carry many cases using the same equipment at first, their equipment compatibility increased in the later stages of the period [25, 26]. In the study of Murphy *et al.* [27], the problems experienced by EMS workers regarding COVID-19 exposure and protective equipment are similar. The professional performance of the difficulties faced by the EMS personnel during the pandemic process was revealed by qualitative research [28]. Due to lack of equipment and work overload in the crisis, EMS personnel are faced with many psychological challenges.

When considering the advice of PEHWs regarding the system, the following codes are revealed: Ensuring life safety; Removing authority limitations; Being prepared; Raising the public awareness; Normalization of measures; Watching new research; and Passion to serve the country have been revealed. It is noteworthy that most of these codes are the main drivers of disaster intervention and first aid intervention [29].

COVID-19 is a pandemic that we handled, questioned and had to improve on using our experience in all disasters up to now. Another noteworthy code among the advice regarding the system is the Turkish Medical Association (TTB). Although the study includes doctors, EMTs, and paramedics, the fact that the only non-governmental organization advised was the TTB, consisting of doctors, shows that strong professional structures are required to represent HCWs in these periods.

As resources could well be particularly scarce during a future serious pandemic situation, timely psychological support could take many forms, including telemedicine and informal support groups.

## 5. Conclusions

Although the COVID-19 pandemic has been a challenging period for many PEHWs, it has also witnessed that available professional equipment, correct professional decisions, and the limits of human endurance were questioned by all of the HCWs. The experience gained from the difficulties experienced during the COVID-19 pandemic period has important lessons for future pandemics and disasters.

## ABBREVIATIONS

PEHW, Pre-hospital emergency healthcare workers; EMTs, Emergency Medical Technicians; EMS, Emergency Medical Services; HCWs, Healthcare workers.

## AUTHOR CONTRIBUTIONS

SY, GSC, and FUC conceived the study, designed the trial. SY, GSC supervised the conduct of the trial and data collection. SY, GSC and FUC undertook recruitment managed the data, including quality control. SY, OK, FUC and GSC drafted the manuscript, and all authors contributed substantially to its revision. FUC, OK, GSC and SY takes responsibility for the paper as a whole.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical permission was obtained from the Cyprus Science University in 1 March, 2021 (No: 202127).

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## CONFLICT OF INTEREST

The authors declare no conflict of interest. Ozgur Karcioğlu is serving as one of the Editorial Board members of this journal. We declare that Ozgur Karcioğlu had no involvement in the peer review of this article and has no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to FG.

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