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Opinions of emergency nurses in Turkey on their work environment during the COVID-19 pandemic and its relationship with their health: A qualitative study

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ABSTRACT

Introduction: COVID-19 patients being admitted to emergency service pose a high risk of exposure and infection to emergency nurses. Therefore, one of the primary responsibilities of hospital management is to provide an appropriate work environment for nurses.
Aim: To analyze the opinions of emergency nurses about their work environment, and to understand how the working environment is related to their health during the COVID-19 pandemic.
Methods: The study employed a qualitative descriptive research design and purposive sampling method. It was conducted in the emergency service of a state hospital in the central Anatolia region of Turkey, which was providing COVID-19 care at the time. The data were collected through semi-structured individual interviews held between January and February 2021. Each interview was conducted only once via WhatsApp video calls. Data collection was continued to reach data saturation (n:14). The data were analyzed using Colaizzi's seven-step content analysis. The Consolidated Criteria for Reporting Qualitative (COREQ) Studies checklist was followed in the study.
Results: Three themes emerged in the analysis of the data obtained from a total of 14 emergency nurses: (a) "Insufficient Physical Environment"; (b) "Inadequacies in Managerial Roles and Skills"; and (c) "The Effect of the Work Environment on Nurses' Health". It was determined that the work environment of emergency nurses was inadequate in terms of resting areas, ventilation and separation of clean and infected areas, and they stated that they had not received adequate support from their managers and encountered difficulties due to equipment shortage, particularly in the early stages of COVID-19. It was also determined that the work environment caused psychological and ergonomic health issues.
Conclusions: It is important to provide adequate managerial support and to make arrangements that resolve the physical and mental obstacles in improving the work environment of emergency nurses.

1. Introduction

Countries all over the world have struggled with the COVID-19 pandemic that emerged in 2019. Undoubtedly, health care

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organizations, which are the main heroes of this struggle, have made great efforts to provide continuous and quality health care services. Health care organizations encountered the first COVID-19 cases in emergency departments, and the first intervention and diagnostic procedures of these patients were carried out in these services [1].

Emergency departments are places where rapid decisions are made, the number of patients is unstable, and in some cases, they function under complex and difficult conditions that require providing services to many patients arriving at the same time [1,2]. During the pandemic, the burden of emergency departments has increased even more with the addition of the suspicion of COVID-19, the high contagiousness and lethality of the disease, the necessity to provide a fast and effective health service, mobility and the simultaneous application of many patients to these complex and challenging conditions [2]. This situation has increased the importance of the key role played by emergency nurses in the fight against the pandemic [3,4], who provide healthcare services to COVID-19 patients one-on-one, while causing them to experience various challenges [5–9].

During the COVID-19 pandemic, it was determined that physicians remained in the background in emergency departments, thus the roles and responsibilities of emergency nurses in complex environments increased [6]. It was stated that emergency nurses faced serious challenges that increased their stress levels both physically and mentally, and were exposed to stigmatization and irresponsible behaviors during triage [8]. A recent qualitative study in Turkey found that emergency nurses experienced physical and psychosocial problems related to fear, exposure and working conditions [7]. A similar study in Brazil found that emergency nurses experienced a lack of personal protective equipment and diagnostic tests, changes in care flow, and fear of the unknown [10]. During the pandemic, changes in emergency care services, work environments, processes and relationships were found to have physical, mental and psychosocial effects on the health of employees. These physical changes were identified as dietary disturbances, physical fatigue and smoking more. Mental changes included anxiety, changes in sleep patterns, fear, fatigue and stress. Psychosocial changes reported by participants included social isolation, loneliness, estrangement from families and social stigma associated with working in a sector dedicated to COVID-19 care [11].

Studies on the subject also determined that frontline nurses experienced insomnia, stress, anxiety, burnout and depression during COVID-19 [3,5–7,13,14]. In addition, particularly during the beginning of the pandemic, many nurses got infected with COVID-19 and lost their lives due to inappropriate working conditions and work environments [15]. All these findings reveal the importance of examining the work environment of nurses, particularly in the context of emergency services, and making relevant arrangements throughout the process [7,8,11].

During the pandemic, the feelings, thoughts, opinions and suggestions of emergency nurses about their work environments and the difficulties and problems they experience due to the work environment can be determined in addition to how these difficulties and problems affect their health? The determination of this situation by the nurses will shed light on the arrangements to be made for work environments in pandemics/epidemics that may occur both in this perild and in the future, and nurses will be prevented from experiencing even more severe problems [11,12]. In addition, a work environment with characteristics suitable for nursing practices is also important in providing quality, safe patient care and reducing burnout and intention to leave among professionals [16,17].

In this context, there is an urgent need for physical and administrative arrangements to improve the problems related to nursing work environment [9]. Administrations that recruit sufficient number of nurses and other employees, provide adequate equipment [3, 18–22], ensure that emergency nurses rest and eat properly, communicate effectively with nurses, provide continuous educational and psychological support, and create appropriate physical environments have gained more importance during the COVID-19 pandemic [21,22]. Fig. 1, created by the authors, summarizes the work environment that nurses should have during the pandemic. Accordingly, in this qualitative study, it was aimed to reveal in detail the opinions, feelings, thoughts and experiences of emergency nurses regarding their work environment and to understand the relationship between work environment and their health status during this process.

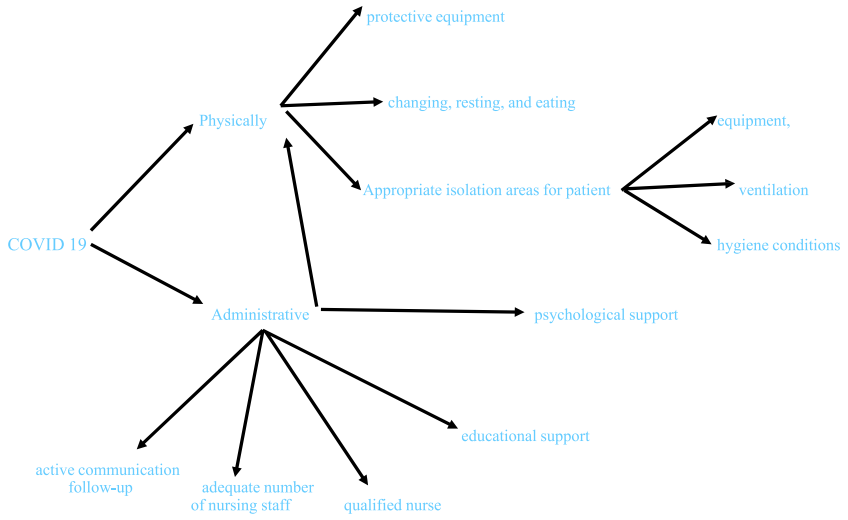

Fig. 1. Safe working environment for nurses during the COVID-19 Pandemic.

2. Methods

2.1. Design

In the study, a qualitative descriptive design was employed to understand the opinions of emergency nurses on their work environment during the pandemic, and the relationship between their work environment and health. Nursing and health research mostly use qualitative descriptive design due to its properties such as being easily applicable and flexible [23]. It is considered the most appropriate design since it reveals the subjective nature of the issue, as well as indicating different perspectives of the participants [24]. Therefore, this method was employed in the current study. The Consolidated Criteria for Reporting Qualitative Studies (COREQ) checklist was also followed [25].

2.2. Setting and participants

The study was conducted between January and February 2021 in the emergency department of a public COVID-19-designated hospital in the Central Anatolian Region of Turkey. Throughout this period, an average of 200 COVID-19 patients applied to the department of the hospital in a day.

A total of 42 nurses were working in the emergency department in addition to their rotational shifts in the quarantine area. A total of 14 emergency nurses worked in a single 24-hr shift, and seven of these nurses were in charge of the care of COVID-19 patients in the quarantine. There were 30 nurses who met the criteria (With the permission of the charge nurse of the department, the nurses were informed about the study via the Emergency Nurses Group on WhatsApp). Nurses with different sociodemographic characteristics such as age, gender and educational level, and those who met the inclusion criteria were included in the study using purposive sampling method to achieve optimal diversity.

The sample size was calculated using data repetition and information saturation. Saturation is explained as no new themes emerging in later interviews [26]. It was determined that the data saturation was achieved and the sessions were completed, and none of the nurses withdrew from the study.

The inclusion criteria were as follows: (a) working full-time for at least 6 months in the department; (b) more than 1 month of experience with providing care for COVID-19 patients on the frontline; and (c) having cognitive ability and communication skills to completely express emotional background. Emergency nurses working as managers were excluded since they had less contact with the patients.

2.3. Data collection

A semi-structured interview form was developed by the researchers based on the literature [27,28]. A pilot interview was conducted with two nurses who met the inclusion criteria and were selected using purposeful sampling. With the permission of the charge nurse of the department, the nurses were informed about the study via the Emergency Nurses Group on WhatsApp. As a result of the pilot interview, the interview guide was revised (only a few words were changed to ensure intelligibility), and two participants who had been applied a pilot interview were not included in the study (Table 1).

Each session was held only once via WhatsApp video calls between January and February 2021. The schedule of the sessions was prepared by reaching those who met the inclusion criteria. The interviews were carried out on nurses' day off. Prior to the sessions, the participants were informed about the objective of the research, their verbal consent was obtained, and audio recording was performed. Due to the high risk of transmission of COVID-19 and to ensure nurses' ability to express their opinions more comfortably, the interviews were conducted remotely online in an environment other than the hospital. Therefore, only verbal consent was obtained at the beginning of the interview. The interviews lasted for 23–60 min, with an average of 36 min (Table 2). The authors qualified in qualitative methods held the sessions.

2.4. Data analysis

The data were analyzed by both authors using the MAXQDA 2020 software program (VERBI Software 2019, Berlin, Germany) adopting Colaizzi's seven-step content analysis method [29]. Colaizzi's [29] method of data analysis is rigorous and robust, and is therefore a qualitative method that ensures the credibility and reliability of the results. It allows researchers to set aside their perceptions of a phenomenon and make sense of a participant's experiences. It also helps create the themes and their interwoven relationships. It is recommended to be used to analyze data in descriptive phenomenological nursing research [30]. Therefore, in this

Table 1
Interview guide

1.Can you introduce yourself briefly?
2.How would you assess your work environment in the emergency department during the COVID-19 pandemic? Please state your opinions.
3.Do you find your working environment adequate in this process? What do you think about this issue?
4.During the COVID-19 pandemic, which problems did you experience the most due to your work environment?
5. What are the effects of the work environment on the health of nurses during the COVID-19 pandemic?What do you think, what do you feel about this?
6. How does the work environment affect the psychological health of emergency nurses during the COVID-19 pandemic?What do you think and feel about this issue?

Table 2
Sociodemographic characteristics and information obtained during the interviews.

Nurse No	Age (years)	Gender	Marital Status	Child	Educational Information	Total Duration of Nursing (month)	Total Duration of Experience in the Emergency Unit (month)	Interview duration (minutes)
N1	26	F	Married	1	Bachelor's	156	7	37
N2	29	F	Married	None	Vocational School of Health	120	120	32
N3	25	F	Single	None	Bachelor's	7	7	42
N4	24	F	Single	None	Bachelor's	8	7	27
N5	25	F	Single	None	Bachelor's	12	12	39
N6	27	F	Married	None	Vocational School of Health	120	36	35
N7	31	F	Married	2	Master's	120	96	23
N8	25	M	Single	None	Bachelor's	13	13	60
N9	25	F	Married	None	Bachelor's	12	12	42
N10	34	F	Married	2	Master's	48	7	30
N11	35	F	Married	2	Vocational School of Health	192	30	26
N12	30	F	Married	2	Bachelor's	120	24	48
N13	24	F	Single	None	Vocational School of Health	36	12	33
N14	32	M	Single	None	Bachelor's	84	36	40
Mean/ SD	28 ± 3.80					192 ± 62.98	29 ± 35.12	36 ± 9.69

study, the seven steps suggested in Colaizzi's data analysis method were followed [29]. The phases of this method consisted of (a) checking the whole transcribed text and reading repeatedly to ensure the accuracy of the transcription, (b) repeatedly marking the specific experiences and the information included, (c) generalizing the information on common experiences in order to create themes, (d) carefully examining the relationship between each theme, (e) generalizing all the topics that emerged in order to clarify the context, (f) formulation of the themes and subthemes of the experiences of triage emergency nurses, and (g) informing three participants about the findings for confirmation of accuracy. In the analysis part of the article, the steps suggested in Colaizzi were carried out as follows in the literature (29).

First, the first author who performed the interview listened to the recorded sessions several times and transcribed the information. The data were coded by the two researchers independently. Following the coding process, the researchers interpreted the results together, grouping them by their meanings, employing their relationships around specific meanings, and created themes through combining the codes. In order to confirm the accuracy of the themes and sub-themes, they informed three participants about the findings and obtained their confirmation.

2.5. Rigor

In addition, Guba's four criteria of credibility, transferability, reliability and confirmability, were used in this study [31]. In the study, credibility was achieved through reflexivity to avoid prejudices about the former experiences of researchers. The researchers separately analyzed the transcripts by highlighting the hypotheses, biases, and theoretical basis. The findings were then compared and discussed by the researchers to achieve external supervision [31]. In this context, participants were asked to read the transcripts and evaluate the comments, which facilitated the dependability. The concept of transferability is defined as the generalizability of inquiry. Accordingly, the questions were reviewed in accordance with the sessions, and transferability was achieved through in-depth individual interviews. The sessions were transcribed verbatim and included in direct quotations. To further increase transferability, participants of different gender, age, educational status, and clinical experience were interviewed using the purposive sampling method. In the last stage, confirmability was discussed through determining that the interpretations of the researchers and outcomes were strictly derived from the data, throughout which the researcher demonstrated how conclusions and interpretations were reached [32]. Accordingly, it was prioritized to include the reasons related to the theoretical, methodological and analytical methodology of the researcher.

3. Results

The sociodemographics of the participants were given in Table 2. The participants consisted of two male and 12 female nurses. The majority were aged between 24 and 35, were married and had no children. A total of four of the participants graduated from a vocational high school of health, eight had a Bachelor's degree and two had a Master's degree. Their experience in the emergency department ranged between 7 months and 120 months, while their clinical experience varied from 7 to 192 months (Table 2).

The study determined three main themes and eight sub-themes regarding perceptions of the work environment of emergency nurses during the COVID-19 pandemic: Insufficient Physical Environment, Inadequacies in Managerial Roles and Skills and The Effect of the Work Environment on Nurses' Health. Fig. 2 included the main themes and sub-themes.

1. THEME: Insufficient Physical Environment

This theme included three sub-themes: inadequate resting areas, insufficient ventilation, and deficiencies in quarantine conditions.

Inadequate resting areas: Most of the nurses reported that they had difficulties about the physical environment, the resting and dining areas were small and were included in the quarantine area, they were not hygienic and appropriate for COVID-19. They also stated that inappropriate working conditions and landscaping during the pandemic made the working conditions of nurses even more difficult and increased the risk of transmission.

> *"For instance, the administration told us to maintain distance when eating breakfast or meals and to avoid sitting as a group while having tea, but the room is not big enough. Three or four of us are changing our clothes with no space between. It is very difficult to work actively in such inhuman conditions."* N2

> *"Our dining and resting areas are very small, and they are across the COVID-19 clinic."* N10

Insufficient ventilation: They stated that the work environments were not sufficiently ventilated, and no provisions were made to improve the ventilation system. This problem was considered one of the most important issues to be solved by the management during the pandemic. Despite this situation, which increased the risk of developing COVID-19, nurses still reported that they continued to provide health care service.

> *"We try to open the window and ventilate the environment, but the windows at the resting rooms face other buildings, and they don't have an open space. So, we cannot have sufficient ventilation. We cannot have fresh air and go out because the weather is freezing."* N1.

> *"The most important thing that should have been done during this period was ensuring appropriate ventilation. This poses a substantial risk for contracting the COVID-19 infection. However, we do our best to provide service despite these adverse conditions."* N4.

Deficiencies in quarantine conditions: The nurses reported that the clean and infected areas were not appropriately separated, patients suspected with COVID-19 infection were mostly treated in the same environment as those with other diagnoses, thereby increasing the risk of infection in those previously not infected with the virus. They also stated that they worked under great risk due to this situation, which led to an important public health issue causing the spread of the disease. In fact, working in these conditions caused stress among many nurses.

Fig. 2. Themes and sub-themes related to the opinions of emergency nurses.

"Patients suspected of having COVID-19 infection and those with stomachache are treated in the same environment, and the same X-ray machine is used for examinations. I fear getting infected. This is a mental disturbance for us." N10

"The quarantine area is between our dining and resting areas. This is a grave error. We are at a great risk." N6

"There are no changing rooms inside the quarantine area that we can use for putting on and taking off the protective equipment. This is critical and important in terms of contracting the viral infection." N4

2. THEME: inadequacies in managerial roles and skills

This theme included three sub-themes: attitude/support toward employee problems, inadequacy of supervision, inadequate equipment, and information.

Attitude/support **to employee problems:** Nurses stated that the management did not pay appropriate attention to the problems of employees, the employees did not have adequate support from their managers related to COVID-19, and this situation decreased their motivation and desire to go to work; and additionally, newly recruited nurses were not provided with sufficient support for orientation and training. In this process, most nurses stated that they expected to be supported by the management; however, they did not receive support.

"… They do not ask if we have a problem; they do not care about anyone. I felt lonely, and at some point, I did not want to work." N10

"*Working in the pandemic is very difficult, and I too felt like receiving psychological support. I'm not well mentally, and I think that the management should help us to deal with these problems."* N2

" …. .It is already a hard process, and we are afraid of this new disease as inexperienced nurses. If I had been taught about such incidents earlier, I could have felt more prepared." N5

Most nurses stated that they wanted to be listened to, and supported and appreciated by the management, which was contrary to their experiences. This situation had a negative impact on newly recruited nurses both in professional and psychological aspects.

"Of course, as colleagues, we can support each other, but I have expected that the management will support us. I have expected the management to support, listen, understand, appreciate, and reward us. The lack of support from the management badly affects our motivation." N11

Inadequacy of supervision: Supervision, research and prevention activities, among the most important functions of management services, became even more important in this period. However, the nurses reported that actions related to protection, prevention, and research for COVID-19 infection, environmental auditing, and cleaning were not adequate.

"Hygienic conditions were not proper. There is a crowded work environment but no order. These all mean risk of infection for us. But unfortunately, there are no regulations." N8

"Unfortunately, no inspection is performed for cleanliness. For instance, a training nurse, infection nurse, and head nurse should check how we are doing." N1

Inadequate equipment and information: The nurses stated that particularly in the first period of the pandemic, there was an inadequate supply of the protective equipment in terms of quality and quantity. Additionally, they were not provided with sufficient information about the process and the use of the protective equipment. Many reported that there were no proper arrangements related to the work environment, that they were unprepared in the face of the pandemic, and they had to work in a "complex environment". They also stated that no precautions were taken until the first case of COVID-19 detected in Turkey, and their training requirements were not met. They mentioned that resource planning was also inadequate, particularly in the early period of the pandemic, and they were forced to work on the frontline despite lack of protective equipment.

"… They have begun this process unprepared. In the first period of the pandemic, there was an insufficient supply of equipment and inappropriate use of masks. They should have been prepared when the pandemic struck." N5

"I feel like we are left in a wild area and learn what we need to do by ourselves. We should have been informed about this process beforehand." N1

"We were not informed about the proper use of the protective equipment, including how to wear it. Initially, some supplies were missing; subsequently, they were provided." N3

3. THEME: the effect of the Work Environment on Nurses' health

This theme included two sub-themes: psychological effects and ergonomic effects

Psychological effects: One of the most important issues in this period was the protection of the mental health of nurses working on the front lines since they were closest to patients, and they could face psychologically challenging situations. In this study, almost all nurses stated that the work environment adversely affected their psychological status during the pandemic, and this situation made them feel lonely, scared, worried, sleepless, stressed and exhausted. The most common emotional experience among emergency nurses was fear. The majority of the participants stated that they were afraid of getting infected, transmitting the disease to family members or others, and death, which caused insomnia and reluctance to go to work.

"Before COVID-19, we did not have to use any protective equipment, glasses, masks, and coveralls. Now, we must use this equipment and we still feel anxious. I am afraid of getting infected." N9

"For instance, I was contacted by a COVID-19 patient in the quarantine area. When I see patients die, I think about my family and my children. I empathize with them; I feel sorry for them. I cannot overcome these feelings. I have bad dreams. I cannot sleep." N2

"People try to maintain a high moral standard while performing their duties. You try to help sick people, but after a while, you feel exhausted. At one point, you start to give from yourself. You feel sorry for them, but you too are in a pathetic condition." N12

"Nurses make the greatest effort in this period. My physical and mental health is getting worse due to working for extra hours. I fear getting infected, and I am reluctant to go to work, which is very difficult. I am physically and mentally tired." N8

Ergonomic effects: The nurses mentioned the ergonomic issues related to their work environment. They stated that their protective equipment did not have necessary characteristics despite being considered adequate, which had adverse ergonomic effects. They also added that working with protective equipment during shifts caused various physical symptoms such as headache, pain in the nose bridge, facial itching, excessive sweating, and fatigue. In addition, they also stated that there was a risk of falling due to unsuitable shoe covers. They frequently said that these situations posed extra difficulty to their work during the pandemic.

"I particularly think that the masks are of a low quality. My throat and headache disappear later. I cough more during and right after my shifts, and my throat gets irritated as I breathe within the mask." N6

"I want to wear the white overalls assuming they would protect me better, but I happen to sweat more. Besides, the masks are of a low quality, and the visors cause headaches. It is challenging to work under these conditions." N9

"I can feel that my nose and face ache after I leave the quarantine area. Feet galoshes are not proper, causing us to fall sometimes." N12

4. Discussion

In the study, it was found that emergency nurses experienced a number of problems related to their work environment during the COVID-19 period and that these problems adversely affected their ergonomic and psychological health. Other studies on the subject also reveal similar findings indicating that emergency nurses experience various physical, psychological and psychosocial problems due to their work environment [5–8,10–14].

In this study, most of the nurses stated that they had problems with inadequate resting areas, ventilation, and quarantine conditions. Similar studies on the subject also support this finding of the present study [7,11]. The study conducted by the Turkish Nursing Society showed that Turkish nurses experienced certain issues regarding their working conditions and environments such as long working hours, insufficient time for resting, resting areas not meeting the standards and/or being inadequate, failure of sufficient and balanced nutrition during the shifts, and lack of training [19]. Previous studies have indicated that an optimal work environment is imperative for reducing burnout experienced by nurse practitioners and their intention to leave [7,16,17,33]. In addition, working with protective equipment for long periods increases the workload of nurses and necessitates creation of a suitable physical environment for meeting their physiological needs such as resting, eating, drinking water, or going to the bathroom [8,11,34]. Many emergency departments have clearly designated isolation areas for patients suspected to have and those confirmed to have COVID-19. However, this separation should be performed meticulously and completely. As reported by the nurses in this study, a failure to separate these areas is associated with a greater risk of getting infected for the society and medical personnel, including nurses [3,35]. An unsuitable physical work environment for emergency nurses and nurses who provide care for COVID-19 patients increases their risk of getting infected, and consequently, they experience concerns as well as fear and stress regarding COVID-19. Therefore, their health and safety are adversely affected [8–12,19]. As a matter of fact, both in this study and in other studies on the subject [7,8,10,11], emergency nurses stated that their risk of COVID-19 increased due to unsuitable working conditions and environment, and as a result, they experienced fear and stress, which adversely affected their psychological health. Therefore, developing a positive work environment has become a priority during this period since nurses provide care to patients despite its highly infectious and lethal traits [36].

One of the most important results of the study was inadequacies in managerial roles and skills during the COVID-19 period. The results showed that the management was not perceived to be paying proper attention to the problems of the employees; the nurses did not receive adequate support from their managers; this situation decreased their motivation and willingness to go to work; and additionally, newly recruited nurses did not receive adequate support regarding their orientation and training. In addition, effective measures related to protection, prevention, and research for COVID-19 infection were not considered to be implemented, and environmental inspections and cleaning were inadequate. During the first period of the pandemic, required protective equipment and supplies were inadequate in terms of quality and quantity, and nurses were not given any information about the equipment

instructions. In a systematic review and meta-analysis study on the subject, it was found that frontline health personnel did not receive adequate support from the management and therefore experienced problems [37]. Similar studies performed during COVID-19 showed that nurses required support from the management, and when they received adequate support, their trust for the organization and motivation increased, while their intention to leave decreased [17,38]. The demand for nursing staff has increased during the pandemic since some have been infected [19,20]. Therefore, nurse managers are required to create an environment of trust by adopting a positive and supportive attitude to reduce nurses' intention to quit their job.

Another requirement for creating a positive work environment for emergency nurses during the COVID-19 pandemic is to prepare newly graduated nurses for working in the pandemic conditions. Many newly graduated nurses leave their jobs due to occupational stress, lack of organizational support, insufficient physician-nurse relationships, excessive workload, inappropriate work environments, and challenges against practicing their theoretical background [12,39,40]. In addition, newly graduated nurses are more vulnerable compared to experienced nurses in terms of the negative effects of COVID-19 [40]. Therefore, it is necessary and critical to meet the educational needs of nurses since they face new situations each day [19].

In this study, according to the opinions of nurses, it was concluded that emergency nurses were adversely affected from physiological and ergonomic perspectives, and thus experienced certain medical problems during the COVID-19 pandemic. There are similar studies which support the current findings revealed in this study [10,37,41,42]. Previous research indicated that using low-quality protective equipment resulted in undesired effects among health care professionals such as headache, dry skin, dyspnea, pressure sore, itching, hyperhidrosis, and dermatitis [41,42]. Additionally, a relevant study conducted in Turkey demonstrated that 66 % of health care professionals experienced similar problems due to low-quality protective equipment [42]. Emergency nurses are under a great risk of getting infected by COVID-19 since they have close contact with the patients in the emergency room, and frequently perform procedures such as endotracheal intubation [43]. Therefore, using low-quality protective equipment increases the risk of COVID-19 infection among nurses and their family members, which adversely affects their health and safety, as well as their close circle [41,42].

In this study, almost all nurses stated that their work environment had a negative impact on their psychological status during the COVID-19 period, which made them feel lonely, scared, anxious, sleepless, stressed, and exhausted. These findings of the study show similarities with other studies in the literature [4–8,12–14]. Factors such as inadequate support, concerns about their own health, fear of spreading the infection to family members or people they contact with, insufficient isolation measures, long working hours, and unsafe and unhealthy work environment were found to have a negative impact on nurses [7,12,44]. Therefore, nurses faced many psychological problems such as fear, anxiety, depression, and insomnia [4–8,12–14]. Psychological effects are aggravated and resilience decreases in case of inadequate emotional and institutional support or safety measures in the work environment [12,45]. Other studies have focused on the continuous improvement of the psychological assessment of professionals [46]. They have mentioned the proper organization of work shifts and reduction of workload [47], the promotion of self-care [48], the maintenance of effective communication, the involvement of mental health professionals in supporting nurses, and the provision of personal protective equipment [41]. Therefore, it is demonstrated that there are effective measures to reduce the psychological impact of the pandemic on frontline nurses. Accordingly, appropriate measures should be urgently implemented to understand the actual emotions and challenges experienced by emergency nurses fighting against COVID-19, and to improve their working conditions and environment which affect these challenges [12].

4.1. Strengths and limitations of the study

One of the strengths of this study is that it provides guidance to nurse managers and policy makers on taking the necessary measures. It also provides data for nurses to take measures to accelerate cooperation with their managers when they encounter a similar pandemic situation.

This study has some limitations. One of the limitations is that the interviews were conducted online. The other is that the qualitative method leads to different results due to cultural differences and divided characteristics of the nurses, managers, and the institution. Accordingly, the current results cannot be generalized. Another limitation is that nurses with different sociodemographic characteristics such as age, gender and educational level, and those who met the inclusion criteria were included in the study using purposive sampling method to achieve optimal diversity. However, the limited number of male nurses who met the criteria may have limited the diversity of the sample. While most nurses clearly stated the problems they experienced, some may not have been able to fully express themselves due to managerial worries, which may have created a slight limitation in the data.

Future studies may compare physical and mental conditions between nurses in high-risk departments (such as emergency departments, special wards and intensive care units) and nurses not responsible for the care of confirmed cases. This would provide a clearer picture of the impact of the COVID-19 pandemic on emergency room nurses. In addition, further research is needed to engage more emergency department nurses to develop the ability to better respond to major infectious diseases and other public health emergencies.

5. Conclusion and recommendations

This study shows that emergency nurses have experienced some problems regarding their work environment during the COVID-19 period, and their work environment has adverse effects on their physical and psychological health.

The COVID-19 pandemic has reiterated the global importance of nursing services. Creating a positive work environment in which emergency nurses can fulfill their roles, and feel safe and healthy is of great importance. In addition, the importance and necessity of a

safe work environment has particularly increased during the pandemic. A positive work environment should be provided for nurses, emergency nurses in particular, to ensure that they can cope with physical and mental challenges specific to this period. Managerial support is inevitably important in this context. Therefore, it is critical for health care management to limit the working hours of nurses, provide suitable areas for working and resting, provide high-quality and adequate protective equipment, and offer special training to nurses for providing care for COVID-19 patients and protecting themselves. The management of nursing services should also create an inclusive environment to ensure that nurses do not feel lonely, and should provide physical and psychological support to create a motivational work environment. The results of this study provide relevant information for creating a positive work environment to ensure the health and safety of nurses during the pandemic, and for guiding nurse managers and policymakers to take the necessary measures.

Ethical statement

Before commencement of the study, written permission was obtained from the Ministry of Health on behalf of the institution where this study was conducted. Approval of the ethical committee was obtained from the T.R. KTO Karatay University Rectorate Dean's Office of the Faculty of Medicine Ethics Committee on Drug and Non-Medical Device Research (Decision Number: 2021–021, Date: January 04, 2021). Before each interview, all participants were given verbal information about the purpose of the study, anonymity and confidential rights. They were also informed that they had the right to withdraw at any time without paying any penalty. All participants provided verbal consent for the research, and their anonymity was preserved. The research was conducted following the COREQ checklist has been attached. The research conforms to the provisions of the Declaration of Helsinki.

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Data availability statement

The data that support the findings of this study can be obtained from the corresponding author upon reasonable request. The data are not publicly available due to ethical restrictions.

CRediT authorship contribution statement

Ayşegül Yilmaz: Writing - review & editing, Writing - original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Seyda Seren İntepeler:** Writing - review & editing, Supervision, Methodology, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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