

## SEN ORIGINAL ARTICLE

# Experiences of nurses working with COVID-19 patients: A qualitative study

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## Abstract

**Background:** The global COVID-19 pandemic has led to massive disruptions in daily life, business, education, lifestyle and economies worldwide. Nurses are a professional group who care directly for COVID-19 patients and thus face direct exposure to the virus. The nurses who work on the front lines during this period put their own well-being at risk to care for these patients.

**Purpose/Aim:** The aim of this study was to identify the experiences and challenges faced by nurses working in pandemic clinics in Turkey during the COVID-19 pandemic.

**Methods:** This qualitative study was based on semi-structured in-depth interviews conducted through the mobile application Whatsapp with 19 nurses who were actively working in pandemic clinics. Due to the pandemic, the snowball sampling method was used to reach the sample group. Interviews were continued until data saturation was achieved. All interviews were audio recorded and later transcribed. The study data were interpreted according to themes identified using thematic analysis. Throughout the study, the authors followed the COREQ checklist.

**Results:** The experiences of nurses caring for COVID-19 patients were summarised into five major themes: psychosocial adaptation, protection, difficulty in care and treatment, access to information and working conditions.

**Conclusion:** Nurses caring for COVID-19 patients in Turkey have been affected psychologically, socially and physiologically. They experienced stigmatisation, exhaustion and burnout. One of the biggest challenges for the nurses was difficulty providing physical care and treatment due to the use of personal protective equipment. Nurses want improved compensation in addition to applause from the public. Interventions to help bolster nurses' psychological and physiological strength are recommended.

**Relevance to clinical practice:** This study emphasised nurses' psychologically, socially and physiologically affected. Therefore, improvements in financial and moral support would provide psychological reinforcement for nurses during the epidemic. Informing the public is necessary to reduce the stigmatisation of nurses working in pandemic clinics.

## KEYWORDS

adjustment disorders, COVID-19 pandemic, nurses, personal protective equipment, qualitative research

## 1 | INTRODUCTION

In December 2019, cases of pneumonia of unknown aetiology were reported in Wuhan, China; on 7 January 2020, the Chinese government announced that it had identified a novel coronavirus as the causative pathogen (Dikmen et al., 2020; Wang & Wang, 2020). Reports of novel coronavirus disease 2019 (COVID-19) soon emerged in many different parts of the world and deaths due to COVID-19 began to accelerate (Zhou et al., 2020). On 31 January 2020, the World Health Organization (WHO) declared the outbreak a health emergency of international concern. As it spread worldwide and became a global pandemic, COVID-19 has caused and continues to cause major disruptions in daily routine, the business world, schools and universities, lifestyles and the economy (Gautam & Sharma, 2020; Karatas, 2020). Various measures have been taken throughout the world to manage the pandemic and alleviate its wide-reaching effects. Transmission between people was found to occur via droplets generated by coughing and sneezing, and by touching the mouth, nose and eyes after contact with common-use surfaces (door handles, faucets, etc.) contaminated by carriers of the virus (Science Advisory Board, 2020a). Therefore, social distancing guidelines were introduced (Science Advisory Board, 2020b). Wearing masks in public is another recommended precaution that has been compulsory in Turkey since 3 April 2020.

Throughout history, pandemics have created fear and uncertainty for individuals and communities (Cinar & Oguz, 2020). The biopsychosocial impact of this uncertainty can harm every aspect of a person's health (Karatas, 2020). The COVID-19 pandemic continues to present a public health threat to societies worldwide as it escalates to the point of overwhelming health care systems, causing unprecedented loss of labour and production, and shifting the global economic balance (Cinar & Oguz, 2020; Karatas, 2020; Korkmaz, 2020).

Pandemics adversely affect healthcare systems and health professionals (Chen et al., 2020; Sun et al., 2020). Health workers are the main and the leading force in the fight against pandemics (Sun et al., 2020). Nurses in particular care directly for patients and are therefore directly exposed to infectious agents. During the pandemic, many nurses working on the front lines have been infected or lost their lives while steadfastly continuing to care for COVID-19 patients despite the risk to their own safety (Sun et al., 2020). Early in the COVID-19 pandemic, more than 3000 healthcare workers in Hubei were infected due to lack of sufficient knowledge of how to prevent and control transmission, and 40% of those cases were nosocomial infections (SCIO, 2020).

Protecting the health of health workers is crucial in critical and emergency situations because they are responsible for preparation, rapid response and critical decision-making to manage the health problems that can arise during these times (S. Li et al., 2020). However, when giving priority to supporting the public during the COVID-19 pandemic, health workers may be overlooked (Oran, 2020). It has been reported that health workers do not receive any support to protect their mental health and fear being quarantined, and that stress is common among medical personnel with occupational risk of contracting COVID-19 (Xiao et al., 2020).

### What does this paper contribute to the wider global clinical community?

- It sheds light on the psychosocial problems experienced by nurses, patients and families during the COVID-19 pandemic.
- It helps identify problems of nurses related to the use of personal protective equipment (PPE).
- It highlights areas of difficulty in the care and treatment of COVID-19 patients.
- It draws attention to the lack of access to evidence-based information in the care of COVID-19 patients.
- It explains the adverse impact of unfavourable working conditions on the fight against the pandemic.

As in society at large, the onset of the pandemic increased anxiety among health workers due to uncertainty, the shortage of medical supplies and the inadequacy of hospitals (Xie et al., 2020). At the start of the pandemic, COVID-19 patients were admitted to dedicated pandemic hospitals or pandemic wards in order to prevent nosocomial spread. Organising and setting up these clinics as well as working in areas they are unaccustomed to have become an additional source of stress for nurses. Moreover, during the pandemic, nurses have experienced personal anxiety due to uncertainty and increased contact with infected patients, despite behaving in accordance with the ethical norms of the profession (Chen et al., 2020; Sun et al., 2020; Xie et al., 2020). The stigmatisation faced by nurses working in pandemic clinics in their social lives has led to limitations in areas of their personal freedom (Chen et al., 2020; Seema et al., 2020; Sun et al., 2020; Xie et al., 2020).

Another issue that nurses have faced during the COVID-19 pandemic is inadequate safety measures related to shortages of personal protective equipment (PPE). Nurses worldwide have continued to carry out their professional duties under difficult conditions in spite of technical and supply limitations. Official reports published by the WHO point to substantial increases in demand for and prices of medical supplies, as well as serious problems in the supply and production of PPE needed by health workers (Mahase, 2020).

Yet another problem seen during the pandemic is that some nurses perceive the personal risks as too high, leading to an increase in resignations and requests to change job assignments (Martin et al., 2013). This results in loss of labour and lower quality of care in health systems and difficulty providing care when needed. Various problems have also been seen among the nurses who have remained in clinical practice and care during the pandemic (Chen et al., 2020; Martin et al., 2013). Staffing shortages in the health system increase the expectations placed on these nurses, resulting in prolonged separation from their families, sleep deprivation and burnout (Huang et al., 2020). These symptoms are exacerbated by reduced sleep quality and inadequate social support for the health workers dealing with COVID-19 patients (Huang et al., 2020; SCIO, 2020; Xiao et al., 2020). Sun et al., (2020)

reported that nurses had insufficient psychological experience for combating the COVID-19 pandemic and experienced intense negative emotions at the start of the pandemic (Sun et al., 2020). In a qualitative study conducted by Liu et al., (2020) with nine nurses and four physicians providing care during the COVID-19 crisis in China, it was found that nurses and physicians feel exhausted by working under new/unknown conditions with a heavy workload and that they fear becoming infected themselves and infecting others (Liu et al., 2020).

Qualitative studies can shed light on the needs of certain marginal groups during the contagious and chronic periods in disease outbreaks (Teti et al., 2020). Open-ended questions have value in addition to conventional quantitative epidemiological methods because their nature is to focus not only on the 'what' but also on the 'how'. Interviews, group discussions and observations investigate different viewpoints, meanings and motivations. They can help explain the gap between the assumptions of epidemiological models and social realities, as well as why some epidemic interventions are effective while others fail (Leach et al., 2020; Silva & Frag, 2012). Although not always as visible as the number of cases during a pandemic, there is a sizable body of evidence supporting the value of qualitative methods in epidemiological research. Leading global health institutions such as WHO and the Centers for Disease Control and Prevention recommend the use of qualitative methods in epidemiological studies (Silva & Frag, 2012; Teti et al., 2020).

Turkey is one of the countries most severely affected by the pandemic, yet little is known of the experiences of nurses working to fight COVID-19. Globally, there have been few studies on nurses' experiences. It is believed that knowing the common issues faced by nurses in various parts of the world may facilitate the collective development of global solutions to these problems. Therefore, this study aimed to identify the experiences and challenges faced by nurses working in COVID-19 pandemic clinics.

## 2 | METHODS

Throughout this study, the authors followed the Consolidated Criteria For Reporting Qualitative Research (COREQ) (Tong et al., 2007). [see Appendix S1].

### 2.1 | Study design

This study was conducted between May 2020 and September 2020 using an inductive qualitative design. In-depth one-on-one interviews were done through the mobile application WhatsApp with 19 nurses working in COVID-19 pandemic wards in Turkey.

### 2.2 | Research team and reflexivity

The four members of research team are active faculty members (professor or lecturer) and a research assistant (PhD student) at nursing

schools. Three of the researchers were educated in internal medicine nursing and one in paediatric nursing. They all have previous experience working in hospitals as clinical nurses. All have received training in qualitative research methods.

### 2.3 | Sample

Due to the pandemic, the study sample was recruited using the snowball sampling method and the nurses were interviewed remotely through the WhatsApp mobile phone application. Interviews were continued until the data became repetitive and were concluded upon reaching data saturation, after interviewing 19 nurses.

Inclusion criteria were as follows: (i) actively working as a nurse in a COVID-19 ward, (ii) being cooperative and open to communication and (iii) consenting to participate in the study. Exclusion criteria were as follows: (i) having resigned from their duties in the COVID-19 ward, (ii) having any language, speech or hearing impairments that would hinder communication and (iii) not agreeing to participate in the study.

#### 2.3.1 | Data collection

A semi-structured interview form was prepared by the researchers based on a review of the relevant literature. The form consists of two parts. The first part includes 10 questions about the nurse's age, sex, education level, years of work experience, the ward they worked in before the pandemic ward, the rotation system in their pandemic ward, their working hours per week, who they live with and any chronic diseases. The second part consists of a list of five basic open-ended questions for use in the semi-structured interview (Table 1). Two pilot sessions were done to test the semi-structured interview questions. After the interview questions were determined to be clear and comprehensible in the pilot test, the data form was applied to all of the nurses. The nurses were interviewed individually by asking the questions in the semi-structured interview form over WhatsApp (Brinkmann & Kvale, 2015). During the interviews, the nurses were asked to describe their nursing experiences, how they were affected, and the problems they faced at work and encouraged to elaborate with prompts such as 'Can you explain your answer a bit more?' and 'What do you mean by that?'. All interviews were performed by the same two researchers (First and Second author)

**TABLE 1** Research questions about the experiences of nurses working with COVID-19 patients

What are your experiences of working with COVID-19 patients?
How has working with COVID-19 patients affected you?
What problems have you encountered while working with COVID-19 patients?
What do you think of nursing care in COVID-19?
As a nurse, what have you experienced in society since the appearance of COVID-19?

and lasted an average of 31.9 min. In total, 542.53 min of audio was recorded. The interviews were recorded using a Sony audio recorder and transcribed verbatim by the same two researchers. After all of the interviews were completed, the study data were transcribed for analysis.

## 2.4 | Strengths and limitations

The biggest strength of our study is that it addresses the dearth of research examining the experiences of nurses working in pandemic hospitals/clinics in Turkey during the COVID-19 pandemic. However, the main limitation of this study is that our results may not be generalisable beyond the study population.

## 2.5 | Ethical issues

This study was conducted in accordance with the principles of the Declaration of Helsinki. Prior to the study, approval was obtained from the Faculty of Health Sciences Ethics Committee of a university (date: 06/05/2020, number: 818295502.903/31) and the Turkish Ministry of Health. Complete confidentiality of the research data was guaranteed. All nurses who participated in the study were informed about its aim and importance and were included after providing written and oral consent. The nurses were informed that their participation was voluntary and that they could withdraw from the study at any time. Those who did not agree to participate were not included in the research.

## 2.6 | Data analysis

The data were analysed using the thematic analysis method according to the stages defined by Braun and Clarke (2006). Since the study was based on an inductive approach, no categories were defined beforehand. The first stage consisted of transcribing the interviews and identifying *in vivo* codes consistent with the study objective. Codes were determined based on the recommendations by Saldaña (2013), and codes with the same meaning were grouped to generate subcategories, categories and themes. Finally, the themes and sub-themes were named and defined (Saldaña, 2013).

The trustworthiness of the study was evaluated based on the four criteria specified by Lincoln and Guba (1985): (i) For credibility, the opinions of nurses with different viewpoints were compared to ensure data source triangulation. The recordings were listened to multiple times to prolong engagement. Furthermore, the study was designed to include more than one researcher. As peer debriefing, two researchers (third, first) regularly discussed the codes and reached a consensus regarding the most appropriate codes, categories and themes. (ii) The thick description method was used to ensure transferability. To this end, detailed explanations were obtained from the nurses in order to fully understand their

experiences during the COVID-19 pandemic. These details were evaluated in the data analysis and included in the manuscript. (iii) The inquiry audit method was used to ensure dependability. The findings were evaluated and themes were confirmed by an external researcher (last author) who was not involved in the data collection and assessment process. (iv) The reflexivity approach was used to guarantee conformability (Cohen & Crabtree, 2006; Lincoln & Guba, 1985; Nowell et al., 2017). During the study period, the researcher in charge of data analysis (third) recorded their views in a reflexive journal.

## 3 | RESULTS

### 3.1 | Participants

The mean age of the nurses included in the study was  $31.9 \pm 7.2$  years; 64.7% were women, 52.9% were single, 52.9% held a bachelor's degree, 58.8% lived with family and 11.8% had to live elsewhere temporarily due to COVID-19. The mean total work experience of the nurses was  $9.9 \pm 8.3$  years; 47.1% were currently working in COVID intensive care units, 41.2% in pandemic wards and 11.8% in COVID emergency departments; 76.5% cared for adults and 17.6% cared for children and adults. Their mean working time was  $177 \pm 32.8$  hr/month and  $49.12 \pm 6.2$  hr/week. Only one of the nurses (5.9%) was diagnosed with a chronic disease.

### 3.2 | Themes and excerpts

Five major themes with subthemes emerged after data analysis: (1) psychosocial adaptation (the initial panic, emotional fluctuations and coping behaviours), (2) protection (preventative measures, challenges related to PPE use), (3) difficulty in care and treatment, (4) access to information and (5) working conditions.

#### 3.2.1 | Psychosocial adaptation

Analysis of the data obtained during the nurse interviews revealed that COVID-19 has placed severe psychosocial pressure on all parties. This pressure has been felt both by infected patients and by everyone with whom the patient has interacted for any reason. Nurses have experienced this most intimately along with their patients. During the COVID-19 pandemic, nurses have formed closer and deeper relationships with patients than even their families. Nurses responsible for caring for these patients around the clock describe it as a new and different process. A nurse expressed her feelings as follows:

I can say that it was an area where I felt useful... I felt that I had really touched their lives, because it was different. I mean, it was so hard to describe. Patients see

you as their only hope. You open the door, and they are waiting for you. You are the only one who can go in and be with them, that's why it feels so different.

*(24-year-old, female, nurse for 2 years)*

### 3.2.2 | The initial panic

The nurses indicated that patients, healthcare professionals, families and society as a whole have gone through several psychological stages since the onset of the COVID-19 pandemic. The first and most pronounced reaction was panic, which arose due to the unfavourable clinical course of COVID-19, lack of information about the disease, difficulties acquiring PPE and uncertainty about the future. A nurse described the panic during the initial crisis as follows:

At the beginning, everyone was in a state of fear and panic. Actually, no matter how much we are informed, you sense that panic in the doctors and faculty as well, because they don't know what to do either. We experienced that a lot in the first stage. What will we do? Everyone was trying to find some information from somewhere. As for treatment, you get a patient with nasal [oxygen], they come in looking just like me or you. You ask yourself why the patient is in intensive care. They look pretty good. One week later, the clinical course changes, the patient deteriorates, they're going to die. Seeing that created a sense of panic in the early stage. We didn't know what to do.

*(41-year-old, male, nurse for 21 years)*

This initial panic was short-lived due to the nurses' previous experience with disasters, epidemics and caring for terminal patients, new developments in the treatment of COVID-19 and easier procurement of PPE. Nurses and the health system reacted quickly to the pandemic and readied themselves for the battle ahead.

### 3.2.3 | Emotional fluctuations

All individuals involved in the disease process went through emotional fluctuations due to various factors. Initially, the predominant feelings were anxiety and fear. The main source of anxiety and fear for nurses was contracting COVID-19 or transmitting it to others:

I was so afraid when resuscitating patients because I did not know what they had. You do many procedures ranging from intubation to aspiration. You are working in full [PPE] but you still worry about the possibility of being infected. For the next five days you wonder, will anything happen, will I get a fever, will I start coughing? *(38-year-old, female, nurse for 17 years)*

More than yourself, you're afraid of infecting your family and relatives, because there are no symptoms. It's in your body and you don't know it. You could infect someone else, and you might not even realize that you are spreading it. So you can't help but worry.

*(41-year-old, male, nurse for 21 years)*

The poor prognosis of COVID-19 in some patients played a substantial role in creating a fearful atmosphere. Nurses experienced shock upon seeing patients who walked into the hospital rapidly deteriorate, require respiratory support and die within a short period. The inability to do anything for the patient and the difficulty of responding quickly due to PPE are emotional challenges for the nurses. As a result, the nurses developed compassion fatigue. One nurse gave an example of a case they were strongly affected by:

A 37-year-old man who passed away caught it from his uncle, who owns a factory. All of his uncle's family members had COVID-19. They were tested later and they were all positive. But none of them had symptoms... It makes you feel so bad. It's devastating. You're really stunned all of the sudden...

*(41-year-old, male, nurse for 21 years)*

Negative emotions experienced by nurses during the COVID-19 pandemic period include sadness, longing, anger, unease, guilt, pessimism, despair, hopelessness, worthlessness, weariness, demotivation and meaninglessness. Additionally, nonadherence to protective measures among the community is further demoralising for nurses.

The fear of wondering, will everyone die this way? Will there be so many deaths? Will my parents die this way, too? Sadness, despair. I felt despair especially. You do some intervention but you get no reaction, no response. You don't know whether [COVID-19] was the reason of death until you see the results. You see every new patient that way. You have to protect yourself. The hospital is not the only life you have. You have to balance both sides. You have your home life as well.

*(39-year-old, male, nurse for 19 years)*

Besides the isolation measures aimed at preventing infection, the social exclusion nurses face due to being perceived as an infection risk by society has led to feelings of isolation and loneliness. Most of the nurses feel uncomfortable because of this stigmatisation:

People avoid you like the plague. Even the people you love most stay away from you. That might be one of the most painful parts. I mean, this is how I see COVID-19. ... We can't socialize. Our social life is over. The only thing we can do is read lots of books at home. You read way more books than you ever did

before, because you are alone. There is nothing you can do but work. That's all you can do. You can't talk to anyone. You can't go out except for work. Social life doesn't exist for us right now.

(41-year-old, male, nurse for 21 years)

The nurses reported demonstrating their negative emotions through reactions such as crying, short-temperedness, intolerance and shouting. Under intense and prolonged emotional pressure, over time some nurses have developed psychological problems such as sleeping disorders, obsession, depression and aggressive behaviour, as well as somatic complaints such as headaches.

Everyone is already psychologically broken down. We all have mental issues. Nobody can claim to be fine psychologically. Everyone is badly broken down. My tolerance threshold has gone down. I have no tolerance for anyone. Others are in a similar situation, too. You might start yelling when you can't find the littlest thing, like some medicine. I wasn't like that before, I used to communicate normally. When I get off night shift, even talking to my family feels like torture.

(22-year-old, female, nurse for 1.5 years)

Some of the nurses try to protect their mental health by isolating themselves from the situation. The most common defence mechanism used by these nurses is to act as if there is no pandemic and deny the situation. Newly recruited nurses were found to have a harder time with psychosocial adaptation, and nurses who contract COVID-19 may have mental difficulties when they recover and return to the pandemic ward. Nurses experiencing problems with psychosocial adjustment are aware that they need support. However, they complain that they have not received any psychosocial support during the pandemic. A senior nurse offered the following insight about nurses who are new to the job:

We had some kids who started just seven months ago. They were really in a bad way, to be honest. They come in through the doors of the intensive care unit, all with sullen faces. These kids have no expectations from life, and they are just at the beginning. They were really devastated. Most of them couldn't even go home. They rented another place so they wouldn't infect their mothers and fathers. We put ourselves aside and tried to inspire them....

(41-year-old, male, nurse for 21 years)

According to the nurses, patients admitted to the hospital due to COVID-19 also experience negative emotions such as loneliness and boredom because they are unable to have visitors while in isolation. The fear and anxiety of death caused by the disease further affect these patients, leading to reactions such as agitation and noncompliance

with isolation measures. Some of the patients feel unease and concern because of the PPE worn by nurses. These patient-related problems lead to nurse fatigue.

Young patients come in. They have families, children. One second you're bringing them into the hospital, and then their connection with the outside world is cut off. Their clinical course starts to decline. The young patient is left alone in a room, facing the unknown. Little by little, people start to feel agitated, the fear of death is there. They don't want you to leave them. But you can't stay with them constantly. We also follow the patients using the central monitor. But no matter how much you explain, they don't understand. Older patients, middle-aged patients, those over 50 always want to talk.

(41-year-old, male, nurse for 21 years)

Some nurses' separation from their children and parents due to social isolation and the feelings of fear and concern their families have for them are other causes of distress for the nurses. The family members of nurses, especially their parents, spouses and children, also experience various psychosocial problems.

I've made sacrifices when it comes to my children, for example... Unfortunately, because lessons and school attendance were all online, I couldn't help my children at all, because I had to stay away. They had to do some things by themselves. Their father is not here, either, so they were left alone. And it affected them psychologically as well. They started to have sleeping problems. They have fears too, but we are trying not to show each other. But we can't help it.

(42-year-old, female, nurse for 22 years)

On the other hand, the nurses also reported having positive feelings of pride that they work on the front lines saving lives, as well as compassion, kindness, courage, self-confidence, relaxation and patience. This battle is a professional and ethical imperative for nurses. Some nurses even believe that the fight against COVID-19 is a sign of patriotism. This viewpoint may help nurses come to terms with the situation and facilitate psychosocial adaptation.

This profession requires compassion and conscience. The nursing profession is not for everyone. Actually at the moment it is highly esteemed in the eyes of the public. Because just like soldiers battling on the front line in a war, we are also on the front lines right now. This gives me a sense of pride. We will do whatever comes our way.

(39-year-old, female, nurse for 19 years)

### 3.2.4 | Coping behaviours

The coping mechanisms employed by the nurses during this period vary. In some institutions, patients, nurses and other healthcare professionals have been supporting each other. The COVID-19 pandemic has given rise to different communication styles. There was a shift from the concept of 'health care team' to that of 'health care family'. The statuses of patient, nurse, physician and other staff were removed, and all energy was directed into fighting against the disease.

It was a very unusual period. Both for doctors and for patients... There wasn't even a difference between nurses and patients. We were all united in this process. It brought us together as one, heart and soul. When a patient needed something, even doctors would bring it to their door. That happened. Sometimes we needed something, and the auxiliaries didn't bring it, the doctor would bring it. It was an unusual experience.

(24-year-old, female, nurse for two years)

The nurses also found strength to cope through altruistic behaviours such as paying from their own pockets to meet the needs of patients whose families could not be with them due to quarantine, by working as a volunteer in the pandemic clinic and by selflessly doing things that are not included in their job description. Depending on their areas of interest, nurses tried to cope with the severe stress with activities such as reading, walking, gardening, worshipping, watching documentaries, keeping a journal, listening to music, chatting, talking on the phone, humour, doing pilates, doing puzzles and dancing. One of the nurses said she started smoking as a coping mechanism. Another reported writing a will in preparation for death. However, it was clear that many nurses managed to accept and largely adapt to the situation within a short time after the onset of the pandemic.

In the end, you slowly start to come to terms with the situation. This is part of our job. Now we are more comfortable than before, believing that at least we have done our best by taking protective measures. I mean, we have embraced it a bit more. We started to see the good and bad courses of the disease. Now we feel a little more at ease.

(41-year-old, male, nurse for 21 years)

### 3.2.5 | Protection

The measures taken to prevent infection was one of the issues most emphasised by the nurses in relation to their experiences during the pandemic. Nurses reported that they take many precautions to prevent the infection from being transmitted to themselves or others and to strengthen their bodies against COVID-19.

### 3.2.6 | Preventative measures

The nurses tried to protect themselves and their community by staying home when they were not working at the hospital. Most of the nurses started to live in a different location because they considered themselves as posing an infection risk to others in their household. The nurses noted that people in the community avoided them because nurses are seen as a contagion risk, that even people who normally did not wear masks wore one when talking to them and that they themselves talked to their relatives only on the telephone when necessary.

I noticed that people kept their distance when talking to me or that people normally wearing no masks were masked when around me. When my neighbors living in the same apartment block wanted something, like medicine or something, I noticed how they approached me. I saw that they didn't get close and wore masks when talking to me. Actually I liked the way they were being careful. Sure, I am careful myself, but it was also a relief to see them being cautious around me.

(29-year-old, female, nurse for five years)

Some nurses reported using separate items and staying in a separate room at home to protect their families. The nurses said they paid more attention to cleanliness of their homes and uniforms, and washed their clothing at high temperatures. They often emphasised the importance of nutrition to increase the body's immunity. In particular, the nurses said they took care to eat food high in vitamins and protein and that they increased their fluid intake. However, they also mentioned that they skipped some meals and were not able to drink enough water due to their intense work in the clinic. For this reason, many nurses take vitamin supplements.

This is a time when everyone should pay attention to their diet. Sometimes we didn't have time to eat. I remember in one shift we were unable to eat anything until very late. We had breakfast at 8 and it was 1 or 2 o'clock at night when we came back to the nurses' room. That long a time. We drink water now and then. Other than that, we went all day without eating anything. Lunch and dinner were served, they got cold and were thrown out. We got over such busy times, thank goodness. It was very hard for me. But when at home, I was extra careful about my diet. Fruit, protein, I tried to eat everything, because we had to stay strong.

(24-year-old, female, nurse for two years)

During the pandemic, nurses are aware of the importance of using PPE in the hospital and they do so with care. Although the nurses experienced problems in accessing personal PPE at the beginning of the

pandemic, they did not report any significant problems for the later periods. Nevertheless, they ranked donning/doffing, putting on multiple layers and the time required for donning and doffing as the greatest problems they encountered related to the use of PPE. This was cited as a problem in emergencies, and it was reported that in emergencies, one nurse would be helped to speed up the gowning up process in order to ensure that the patient received medical attention without delay. Nurses have stated that they sometimes took a risk and entered patient rooms to intervene in emergencies before fully gowning up. In addition, patients calling the nurses over 'trivial matters' and making nurses don PPE again had become a source of stress.

We had no problems in terms of supply, but it takes so much time to put on and work inside the [PPE]. It takes 15 minutes before we can go to the patient, which includes dressing, getting prepared, and readying our tools... it's a whole procedure. The pulse oximeter, thermometer, sphygmomanometer, you don't touch anything. The preparation of all of these is difficult of course.

(24-year-old, female, nurse for two years)

The patients are conscious, so they call you to ask something simple but you have to totally gown up first before you can go in. The patient asks the time or asks where they are. They forget. Very simple questions but you have to gown up for 15 minutes to go in. That makes it a big hassle for us.

(41-year-old, male, nurse for 21 years)

In general, nurses believe they have started to embrace the use of PPE and that it must be used more often for protection against infectious diseases other than COVID-19.

Before, we didn't know about the patients' condition and we approached them with little protection. We worked so unprotected. From now on, I'm planning to use [PPE] when dealing with some specific patients.

(38-year-old, female, nurse for 17 years)

The nurses try to spend as little time in the patients' rooms as possible. Other health workers do not see patients unless absolutely necessary because elective operations were postponed during the pandemic. The nurses stated that some health professionals (e.g. physicians, psychologists and caregivers) did not want to enter the patients' rooms. As a result, in some centres, health care is provided almost exclusively by nurses. This was more pronounced at the start of the pandemic, which made some nurses uncomfortable.

The only group of health workers that interact one-on-one with the patients is nurses, without a doubt. If

I had to be more specific, I can say that this includes nurses providing care in intensive care units, in emergency department COVID outpatient clinics, and in COVID wards. Before, I thought that health care professionals were a team, everyone worked together to care for patients. But right now, I think we've kind of been left alone. My viewpoint has changed. I think we have been left alone to a degree in the pandemic. I care for intensive care patients. Physical therapists should be coming to help patients get exercise, to be prepared for mobilization during the recovery period. But I have seen very few physical therapists during the pandemic. Normally they would come.

(26-year-old, female, nurse for 2.5 years)

### 3.2.7 | Challenges related to PPE use

The nurses reported many complaints regarding PPE. Nurses have difficulty performing even basic nursing procedures when in PPE. It is especially challenging to see and feel the vein when establishing vascular access.

When you're establishing vascular access, you can't see the vein. After staying with the patient for a long time, sweat starts dripping down your face. It drips on your goggles and you can't wipe it off. It's terrible. I mean, you have to finish your task as quickly and practically as possible and get out, but that catheter has to be inserted. You go in as a team. Sometimes you stay in there for two hours. A dialysis catheter is placed, the patient is taken for dialysis or the patient is intubated, tracheostomy is performed. These procedures are a challenge for everyone in the team. You can't even see past your nose, let alone deal with the patient...

(41-year-old, male, nurse for 21 years)

Fogging on the visor and goggles impairs vision. Voices are indistinct from within the protective coveralls. Therefore, patients and nurses have difficulty hearing each other. As a solution to this problem, patients are called on the phone from outside the room to repeat the information.

They can't understand what I say. The person you are talking to says 'I can't hear you clearly, you're too quiet,' or 'I can't understand.' Your voice is muffled by the coveralls. And then there are the mask and goggles, your voice can't be heard. Most of the time, I call the patient after I leave the room and explain over the phone. I say 'I told you this just now, did you understand me?' And they say 'Oh, is that what you said?'



The patient is listening to me but the problem is that they can't hear my voice.

(27-year-old, female, nurse for four years)

Walking and moving around in PPE is another problem:

It's very difficult. It is hard to work in coveralls. It makes you sweat. They are really hard to work in. Even moving is difficult. Sometimes I feel like I can't breathe, like maybe I am going to fall over. We had a really hard time during treatment.

(24-year-old, female, nurse for two years)

Finally, PPE causes the nurses physical discomfort. The main causes of this discomfort are the perceived lack of oxygen inside PPE, allergic reactions, pressure exerted by the equipment and the disinfectants used to clean equipment. The main issues reported by nurses are overheating, a suffocating feeling, excessive sweating, tachycardia, difficulty breathing, chest tightness, fainting, fatigue, headache, sore throat, muscle and joint pain, redness on various parts of the body, particularly the face and hands, skin reactions like sores and pimples, and pain at pressure points.

The [PPE]... you physically cannot breathe, for one. When you can't breath, you're always just recycling your own breath and then tachycardia starts from re-breathing carbon dioxide. You feel like you're fainting a lot of the time. It's even worse with the effect of hot weather. Our noses are the main problem. The metal part of the mask presses on our noses. When goggles are added on top of that and when they're worn for many hours, we can't touch them or fix them. Our hands get dirty, they are contaminated. We have to avoid touching our face. When we come out, our noses are all peeling and there's a mark from the masks. I come home with a swollen nose. I feel it throbbing all evening. We feel the same thing the whole day, all of us.

(42-year-old, female, nurse for 22 years)

### 3.2.8 | Difficulty in care and treatment

The nurses reported difficulties providing care and treatment for reasons such as patient characteristics, crowded wards and the use of PPE. They also stated that because providing physical care and administering timely treatment took so much time, they were unable to meet the need to talk and chat felt by patients who were alone due to isolation measures. Many of the nurses had difficulties in managing the care of older patients with comorbidities such as dementia and Alzheimer's disease. Other difficult patient groups are children and conscious patients. COVID-19-positive mothers are treated together with their COVID-19-positive children, and nurses

inexperienced in working with children reported having difficulty in treatment. Similarly, conscious patients have issues with treatment compliance.

We had trouble with oxygen treatment. COVID patients are conscious, and so this patient group is always in distress. Because they are always moving around, this or that gets disconnected. Like, they take off the oxygen probe from their finger. Or the oxygen on their neck. Then you have problems. It takes your time to go in, and in the meantime their saturation falls.

(39-year-old, male, nurse for 16 years)

Under normal circumstances, companions would meet most of the patient's basic needs such as bathing and feeding them, and since these patients had no companions who could assume these duties, there was a sudden, sharp increase in the nurses' workload. As patient numbers surged, this aspect of the pandemic became challenging for nurses.

It was difficult to turn the patient to the side and clean their bottom, because the patient had no companion... I needed a companion for cleaning. Where I worked before, the patients had companions who helped them have breakfast, but when I came here, we had to help patients who couldn't have breakfast by themselves.

(30-year-old, male, nurse for 5 years)

### 3.2.9 | Access to information

The disinformation that emerged since the start of the COVID-19 pandemic has also affected nurses. In addition, the scarcity of scientific information was a major obstacle to the provision of evidence-based care.

I didn't feel competent at first, because we didn't know how to approach it. We didn't know what was important. We had limited knowledge about what to watch for in a patient, should we look out for fever or something else?

(29-year-old, female, nurse for 5 years)

The nurses tried to combat this by finding accurate information. Conventional media and social media are two main sources of information. Physicians and other nurses also contribute to current information via these sources. The nurses reported quickly posting new information and following others' posts in social media groups they established.

Infection nurses followed this topic. They immediately posted any recently published articles, for

instance about donning PPE, to these groups. They provided guidance on how to wear the equipment or for any other situation, anything that happened. The management made that decision.

(29-year-old, female, nurse for 5 years)

Nurses also believe that the problems they have faced when dealing with COVID-19 patients were not accurately reflected in the media.

I just don't get it. They didn't let nurses who actually deal personally with COVID-19 patients speak. The brought in irrelevant people from here and there and interviewed them. But they definitely never got the people who actually dealt with these patients and asked them to talk. What they've been through, what they've done. They just showed people's lives as videos. But there was no real direct discussion of what people are doing, the suffering, how they are psychologically, the experiences of people and health workers.

(42-year-old, female, nurse for 22 years)

### 3.2.10 | Working conditions

The occupational issues faced by nurses before the pandemic also reflected poorly during the pandemic. Nurses have also felt targeted by negative discrimination within the health system during the pandemic. They believe that their professional rights have been denied and that they have been overworked. Nurses are especially dissatisfied with their income and heavy workload. The lack of a nurses union is seen as the main reason for this. It is understood that nurses generally believe they are undervalued. The nurses stated that they were the members of the healthcare team that worked hardest and fought on the front line during the pandemic.

I think that we as the nursing team have served to the best of our capacity. I mean, we are on the front lines. I don't think there is anyone else fighting on the front lines that makes a greater effort than we do.

(42-year-old, female, nurse for 22 years)

They reported that the pandemic had raised public awareness of the nursing profession and that although they were honoured by the applause they received every evening across the country, it was not enough, and they still consider themselves subjected to a double standard among the health-related occupations in some situations. However, the nurses expressed that this period has also helped them gain a better understanding of how crucial their profession is. Negative thoughts led some nurses to regret having chosen nursing as a profession. Others stated that they would leave the profession if they had the financial means to do so.

All we got was applause. We raised people's awareness somewhat, that I agree. I mean, people finally recognized how important our profession is, because we were never favored, never acknowledged professionally. We were seen as just assistants to doctors. Not even a doctor's assistant. We were treated like hospital workers, like caregivers. In fact, we perform important tasks at crucial moments. I mean, now society is aware that we also do many important things. They look at us with a different perspective. But I think our officials have not been of much help in that regard. Materially or morally. In terms of compensation, for instance, as civil servants our salary is very low. We have received no support of any kind during this period. And in terms of moral support, we were deemed worthy of some applause only. Other than that, nothing was done. I mean, nothing.

(42-year-old, female, nurse for 22 years)

## 4 | DISCUSSION

This study is important because there have been few studies of the COVID-19 experiences of nurses in Turkey, and our results may provide guidance regarding measures that can be taken worldwide. Five major themes were identified in this study: psychosocial adaptation, protection, difficulty in care and treatment, access to information and working conditions. The discussion below further examines these themes.

One of main groups affected by the COVID-19 pandemic period is healthcare professionals. While others in the community had to stay home and avoid social contact, health workers and nurses in particular continued being exposed to the virus as they continued providing care (Lancet, 2020). The most common emotion experienced by nurses during the COVID-19 pandemic is anxiety, due to fear of being infected and infecting their families, financial pressure, long working hours without adequate nutrition, PPE shortages, the death of patients and colleagues, and lack of child care (Gilroy, 2020). This finding supports other studies concerning nurses who work with COVID-19 patients. In a systematic review and meta-analysis, 22.6% to 36.3% of health workers reported feelings of anxiety (Pappa et al., 2020). Previous studies have also yielded similar results (Aksoy & Koçak, 2020; R. Li, Chen, et al., 2020). Hu et al., (2020) reported that nurses experienced high levels of fear and that 3.3% of nurses suffered from severe anxiety (Hu et al., 2020). Kackin et al., (2020) reported that nurses exhibited high levels of anxiety as well as increased obsession and depression, which could lead to post-traumatic stress disorder in future (Kackin et al., 2020). However, in another study, it was determined that the anxiety scores of nurses caring for COVID-19 patients were unchanged, while their depression scores were high (Terçan et al., 2020).

The uncertainties that emerged at the start of the pandemic persist and this exacerbates people's anxiety (Aksoy & Koçak, 2020). This study also showed that nurses have increased anxiety due to uncertainty. Nurses are exhausted, burned out and worried about the future. On the other hand, nurses have adapted as more information about the disease became available. Continuing education plays an important role in preparation and rapid response to hard-to-control conditions that emerge in critical and emergency situations. The pandemic revealed the necessity for both healthcare professionals and the public to have access to sufficient and accurate information.

One of the most important problems experienced by nurses during the COVID-19 pandemic is their feelings of social exclusion, isolation, loneliness and stigmatisation. COVID-19 patients as well as healthcare professionals have been subjected to stigmatisation during the COVID-19 pandemic. This was exacerbated by ignorance about the disease and misinformation propagated by the media. Despite applause from the community at 9 o'clock each evening to support health workers, the stigmatisation could not be prevented. It was reported that as of May 2020, health workers around the world had suffered more than 200 attacks during the pandemic (Bagcchi, 2020). In a study in Canada, 33% of the general population said they did not want to be around healthcare professionals and 32% said that healthcare professionals working in hospitals would carry COVID-19 (Taylor et al., 2020). Stigmatisation has negative effects on health workers and contributes to burnout (Ramaci et al., 2020).

Another psychological phenomenon that nurses have experienced in this period is compassion fatigue. Compassion fatigue is the emotional state and stress response exhibited by a person who witnessed a severely distressing situation or a tragic event, were informed about such an event, or were indirectly exposed to it occupationally (Gurkan & Yalciner, 2017). Limited resources, frequently witnessing the suffering or death of patients, and feelings of uncertainty, despair and fear can lead to compassion fatigue in nurses working with COVID-19 (Aksoy & Koçak, 2020; Alharbi et al., 2020; Ornell et al., 2020). Furthermore, being portrayed as superheroes by the media puts even more pressure on health care professionals when patients are lost, which in turn may contribute to compassion fatigue (Ornell et al., 2020).

Nurses have taken various measures to be able to cope with this period. Among the primary measures are properly donning PPE, living apart from their families, washing their clothes at high temperature, eating food rich in vitamins and protein, and taking vitamin supplements. Cai et al., (2020) reported in their study that healthcare professionals managed stress by carefully donning PPE and paying special attention to hand hygiene (Cai et al., 2020). The nurses in our study reported coping with stress using methods such as reading, going for walks, gardening, worship/prayer, keeping a journal, listening to music and humour, which are nonpharmacological approaches shown to be beneficial to psychosocial health (Shen et al., 2020). In this regard, the fact that nurses are using their mental health knowledge to protect their own well-being is a positive finding. However, it is clear that nurses are at risk of resorting to maladaptive coping

strategies and developing severe psychiatric problems, and that their psychosocial support systems are insufficient.

Ensuring the safety of nurses and other frontline healthcare professionals in the fight against COVID-19 is imperative. The risk of transmission of dangerous infectious diseases to healthcare professionals is not new. Health workers have already encountered diseases like HIV/AIDS, SARS, swine flu and Ebola. In spite of the scarcity of information about the virus, pathophysiology of the disease and routes of transmission, as well as problems PPE supply chain failures, health workers have continued to put themselves at risks in this unknown situation (Morley et al., 2020).

The rapid spread of COVID-19 made it increasingly essential for health workers worldwide to use PPE. Countries that were generally unprepared for the pandemic had problems with PPE supplies. Furthermore, having to work long hours in PPE led to deviations from the proper PPE use recommended in guidelines and to various other problems (Sharma et al., 2020). Certain problems arose because PPE was not widely used in hospitals in Turkey before the COVID-19 pandemic. According to a study by Atay and Cura (2020), nurses had problems of perspiration, redness and irritation of the cheeks, and dry mouth associated with wearing N95 masks. The same study determined that protective goggles and face shields caused vision problems in 47.9%, perspiration in 47.6%, headache in 38.0%, and redness around eyes in 27.1%, while wearing protective coveralls resulted in perspiration in 84.1% and feeling overheated in 83.3% of nurses (Atay & Cura, 2020). In the present study, it was determined that wearing masks leads to fogging of face shields and goggles, impaired vision and made it difficult for nurses to establish vascular access and perform other tasks. The nurses said that for this reason, they wipe the goggles and shields with dish soap or baby shampoo to prevent fogging and after some time the dish soap caused itching and redness of the eyes.

Another problem related to the use of PPE is its interference with verbal communication. This occurs because masks obscure lip movements and facial expressions and the bonnet worn over the head covers the ears (Hicdurmaz & Uzar, 2020). This creates a problem between patients and nurses and between nurses and other health workers. It is especially problematic when working with the geriatric age group and makes it difficult to continue treatment. Producing PPE that is more permeable to sound and makes lip movements visible may be a useful step towards the solution.

Nurses want to wear PPE not only to protect themselves but also to avoid spreading the disease to their loved ones, dependent children and anyone with chronic health problems (Morley et al., 2020). In this study, nurses stated that they experienced anxiety because the infected individuals become contagious immediately, before the appearance of any symptoms. Especially those who have family members with chronic illnesses and those who live with older relatives and small children expressed fear of infecting their relatives. Similarly, other studies have also shown that health care professionals are afraid of infecting their families (Cai et al., 2020; Chew et al., 2020; García-Martín et al., 2020).

In Turkey, the initial stage of the COVID-19 pandemic was better controlled than in many other countries. PPE was procured quickly, pandemic hospitals and wards were established, rapid information exchange was ensured, and new personnel were assigned. Moreover, as in all pandemics, the duties of caring for patients who were in a state of uncertainty, fear or panic and calming the patients and their families fell to the nurses during the COVID-19 pandemic (Buheji & Buhaid, 2020). One of the main problems nurses faced during this period was fatigue. In addition to fatigue caused by uncertainty, it can also be caused by high patient numbers, staffing shortages, time-consuming PPE donning/doffing, and the excessive sweating and breathing difficulty caused by PPE (Loibner et al., 2019). Fatigue has been further exacerbated by factors such as recruiting new personnel who are unfamiliar with critical care, the fast and dynamic disease course, and lack of adequate protocols (Gao et al., 2020; García-Martín et al., 2020). In one study, nurses reported having the greatest difficulty with team management and supply of materials (Góes et al., 2020). It may be beneficial if intensive care units treating COVID-19 patients are staffed by nurses who have intensive care experience and if intensive care nurses are supported by management and the intensive care team. Also, establishing a safe and healthy working environment to minimise the potential anxiety and stress of the staff will increase the quality of health care professionals as well as the care they provide. Healthcare professionals will be able to focus more on the treatment of COVID-19 patients and direct their energy accordingly (Kim & Su, 2020).

Nurses have expressed having difficulty related to oxygen therapy when caring for COVID-19 patients. One of the main symptoms of COVID-19 is dyspnoea and oxygen desaturation. Dyspnoea may further impact patients by causing fear and inducing delirium. Therefore, it may be helpful for nurses to inform, warn or establish communication as appropriate with patients and assure them that they are not alone (Bajwah et al., 2020).

The present study revealed that nurses had difficulties caring for older patients, patients with Alzheimer's disease and paediatric patients in intensive care during the COVID-19 pandemic. Several reasons were cited for this, including the patient's relatives not being admitted to the room, nurses being called for even basic needs and having to deal with the challenges of using PPE, patients not complying with treatment, other staff responsible for the patient being reluctant to enter patients' rooms and nurses trained in adult care having to care for mothers and their children in the same ward. In general, the COVID-19 pandemic has had the greatest impact on the older population. Especially after media reports that the disease was deadlier in older adults, a lockdown was ordered in Turkey for those over 65 years of age. This led to problems for older people, including discrimination. Furthermore, as with everyone who contracts COVID-19, older people have a heightened fear of death (Banerjee, 2020) and being alone can be particularly difficult for older people. Thus, older people become more demanding and nurses are left alone with them. The fact that psychologists did not visit the intensive care unit to provide psychosocial support may have further contributed to nurses' caring challenges.

Another finding from this study is that although some hospitals prefer a family-centred approach in which COVID-positive children and parents are treated together in the same ward, nurses have had difficulties in the care and treatment of these children. This is likely due to the fact that adult nurses in these wards do not have special training and experience in working with paediatric patients. However, in the care of children, field-specific education constitutes the most important basis of professional practices (ANA, NAPNAP, & SPN, 2015).

As in the rest of the world, nurses in Turkey also faced daunting uncertainty during this period, which increased the importance of centralising information. Under normal pre-COVID circumstances, hospital infection control committees assumed critical duties such as protecting staff and patients from infection, tracking diseases, identifying sources of infection and implementing early preventive measures. In Turkey during the COVID-19 pandemic, information was disseminated regularly by the Ministry of Health Scientific Council and in hospitals by infection control nurses via WhatsApp groups. Nevertheless, uncertainties related to COVID-19 also affected this information flow, and social media occasionally stoked anxiety with fake news reports. It was also stated that the mainstream media news did not adequately cover problems experienced by nurses and that doctors were at the forefront while nurses' voices were not heard enough. In another study, nurses working in paediatric units stated that the lack of training about COVID-19 was a challenge for them (Góes et al., 2020).

During the COVID-19 pandemic, nurses have done everything they can to fulfil their roles as well as possible. Nurses have also become more aware of the importance of their profession and felt proud. Many nurses perceive working in pandemic clinics as essential and have been working willingly in these clinics. Similarly, according to a study conducted in China, health workers regarded working during the COVID-19 period to be a moral imperative (Cai et al., 2020).

During the COVID-19 pandemic, health workers have been applauded in Turkey as a show of support, as has been done elsewhere in the world. However, when weighed against their workload and the risks, nurses believe that this is not sufficient and that they are subjected to a double standard compared to other health workers. For this reason, some nurses regret choosing the nursing profession and say that they would quit if they had the financial means. In a study performed in Turkey in 2017, 67.3% of the nurses said they felt hopeless about the future of the profession and 68% expressed dissatisfaction with their professional life (Yakit & Uyurdag, 2017). The unfavourable working conditions that existed in our country before the pandemic have further deteriorated for nurses during the pandemic.

Buheji and Buhaid (2020) suggested recognising the devotion shown by nurses during the COVID-19 pandemic not only with applause but also by improving their income based on their productivity. In this study, we found that nurses believed that public opinion about them had changed and that society now had a better understanding of nursing beyond the previous perception as doctors'

assistants. It was also determined that nurses' perceptions of the profession were adversely affected during this period due to the lack of equal personal rights compared to other healthcare workers, and that nurses want not just applause, but for authorities to implement initiatives to also improve their compensation.

## 5 | CONCLUSIONS

This study demonstrated that nurses actively working in COVID-19 pandemic clinics have been adversely affected both psychologically and socially. The nurses in the study sample expressed problems related to psychosocial adaptation, protection, difficulty in care and treatment, access to information and working conditions.

Although they are supported by society in principle, nurses have experienced adverse physiological and psychosocial impacts due to unmet psychological needs. Therefore, further studies should be conducted with nurses actively working in pandemic clinics in order to activate the psychosocial support system. Possible suggestions include adopting reformative and feasible health policies to cope with the fear of infecting others, death anxiety, and the physical and mental fatigue experienced by nurses working in COVID-19 pandemic clinics, implementing psychosocial support programs for nurses in pandemic clinics, focusing on innovation studies to develop more user-friendly PPE, improving nurses' working conditions and developing programs that will make them feel valued. In addition, conducting further qualitative studies about the COVID-19 pandemic will add to our information about the present situation and about pandemics that may occur in the future and provide guidance on how to effectively manage these situations.

## 6 | RELEVANCE TO CLINICAL PRACTICE

Findings of this study showed that nurses' psychologically, socially and physiologically affected during COVID-19 pandemics. Further research is needed for the activation of psychosocial support systems and reducing burnout among nurses working in pandemic clinics. Improvements in financial and moral support would provide psychological reinforcement for nurses during the epidemic. Informing the public is necessary to reduce the stigmatisation of nurses working in pandemic clinics. Improving nurses' working conditions would make the fight against the pandemic more effective. Innovation studies are needed to develop more user-friendly PPE.

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### CONFLICT OF INTEREST

The authors report no actual or potential conflicts of interest.

### AUTHOR CONTRIBUTIONS

Responsibility for the study design: Y.A. and Y.K; Responsibility for supervising the study: Y.A. R.G; Responsibility for data analysis: R.G; Provision of peer review during the analysis process: Y.A.; Responsibility for manuscript writing: Y.A., Y.K., R.G., and B.K.; Confirmation that all listed authors meet the authorship criteria and that all authors are in agreement with the content of the manuscript: the authors.

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#### SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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