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Research

Experiences of Operating Room Nurses During the COVID-19 Pandemic: A Qualitative Study

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\textbf{ABSTRACT}

\textbf{Purpose:} The study was conducted to examine the experiences of operating room nurses during the COVID-19 pandemic.

\textbf{Design:} This study was designed as a phenomenological qualitative research method.

\textbf{Methods:} This study was conducted with 10 volunteer operating room nurses who met the criteria for participation in the study between February 2021 and March 2021 in a public hospital. Data were collected using a personal information form and a semi-structured interview from using the in-depth interview technique. Two researchers and one expert created the themes and codes using the thematic analysis method.

\textbf{Findings:} As a result of the analysis, four themes and 29 codes were identified. The following codes were created for the theme “Changing systems and practices in the operating room”: Personal protective equipment and sterility, workload/time, lack of communication between patient and nurse, decrease in the number of cases, change in the use of emergencies and elective procedures, flexible working methods. On the theme of the impact of the pandemic, anxiety/anxiety, psychological distress, difficulty with personal protective equipment, lack of nurses, longing/distance from family, sleep disturbances, family problems, and difficulty working in another department were noted. On the theme of coping strategies for the pandemic, the codes found were: communication with family, breathing/sporting exercises, spirituality, regular/healthy diet, online shopping, watching TV series/movies, and acceptance of the process. On the theme of “learning from the pandemic,” the codes of the importance of life/health, the importance of family, worthlessness of the caring profession, financial injustice, gaining work experience, the importance of personal protection, lack of union support, and job satisfaction were produced.

\textbf{Conclusions:} The study found that the nursing in the operating room has changed due to the COVID-19 pandemic, that nurses have experienced many positive/negative impacts, and that they have gained many benefits from the pandemic through various coping methods.

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The Coronavirus epidemic (COVID-19), termed a “pandemic” by the World Health Organization, is a critical public health problem. As with most epidemics and pandemics, health workers are at the forefront of the fight. However, while all countries continue their fight against COVID-19, nurses are on the frontline and have made great sacrifices in this fight.\textsuperscript{1,2} Operating room (OR) nurses, who work in ORs and significantly impact the surgical process, have also taken on a primary responsibility in the COVID-19 pandemic. However, studies examining the experiences of OR nurses during the COVID-19 pandemic process are few in the literature.\textsuperscript{3,4} Therefore, this study was planned to explore the experiences of OR nurses during the COVID-19 pandemic process, examine the case management of surgeries performed during the pandemic, discuss how OR nurses are affected by the pandemic process and how they cope with these effects and provide scientific data for the literature.

\textbf{Methods}

This study was planned as a qualitative study and a phenomenological design was used. The phenomenological approach is a research design increasingly used in social and health sciences. Phenomenological studies aim to understand the life experiences that emerge from the participants’ perspectives. The basis of this approach is an individual experience. The researcher deals with the participant’s personal experiences and examines the individual’s

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perceptions and the meanings they attribute to events. While creating this study, Standards for Reporting Qualitative Research checklist guidelines were followed.5,6

Population and Sample

In qualitative research methods, obtaining comprehensive and valid information about the number of participants is the primary rule in determining the sample size, and adequacy and saturation are essential for the sample size.7 The population of the research is OR nurses working in a public hospital in Zonguldak province. The study sample consisted of 10 nurses working in the OR in a public hospital in Zonguldak province who agreed to participate and met the criteria for the study. Since there is no specific sample size, it was carried out using homogeneous and criterion sampling methods, which are purposeful. The criteria for inclusion in the sample were: older than 18 years of age, not having any psychological problems, working as an OR nurse for at least six months, working in the OR during the pandemic, not having vision, hearing, perception problems, or disabilities, agreeing to participate in the study voluntarily.

Data Collection

Data were collected through an in-depth interview method. The semi-structured interview form was used, and the interviews were scheduled for face-to-face interviews for each participant. They were conducted using voice recording with the permission and consent of the participants. Interviews were held in a comfortable and calm environment in the nurse’s room between February and March 2021, lasting approximately 30 minutes for each participant. The interviews were terminated when data was reached through repeated and similar statements and lasted 257 minutes. Before the interview questionnaire was applied to all participants, a pilot study was conducted. The researcher conducted the pilot study with one nurse who met the criteria for participation but was not part of the sample group. There were no technical problems in the pilot study, there were no questions the participant did not understand, the participant provided answers to the questions, and the questions were appropriate for the research topic.

Experts conducted interviews in the field. One of the researchers is a lecturer who has completed qualitative research methods training, worked as a clinical nurse during the COVID-19 pandemic, and had a Master of Science degree in nursing.

Data Collection Tools

The study data were collected through a personal information form and a semi-structured interview form. The personal information form was composed of nine questions about nurses’ socio-demographic characteristics, age, gender, educational status, professional experience, working experience in the OR, education about the Covid-19 pandemic, working hours, and working style. The interview form questions were prepared according to the research topic and purpose by scanning the literature, and the form was finalized by taking expert opinions from 5 people.8 The questions in the interview form are listed in Table 1.

Evaluation of Data

Participants were coded as “N”; to express the word “nurse” without using their names. Following the principle of confidentiality, the participant was given numbers N1 and N2 next to the code. While analyzing the data, van Manen’s thematic analysis method was used, and the data were analyzed for each participant on the day of the interview.9 The participants’ statements were interpreted by quoting directly by adhering to the original form of the interviews. Answers were expressed in all interviews according to the topics. The interview form was converted into written form in an electronic environment and gathered together. Afterward, the text was read independently by the researchers many times. The codes were determined following the research purpose in line with the notes taken during the interview. These inductively generated codes were placed under themes. In order to ensure consistency in the data analysis processes, it was examined whether there was meaningful integrity between the theme and the code. The themes and codes created by the qualitative analyst were checked, and the research team reviewed the identified themes. The whole process was done by the researchers individually, and the themes and codes were clarified in consultation with the research team.

Validity and Reliability of the Research

Lincoln and Guba’s criteria were used to ensure the validity and reliability of the data.10 In the research, themes, and codes were examined with the interview form by the field experts and the research method. Data were turned into a report by taking expert opinions. More than one data collection tool was used, and the suitability of the data collection tools for the research was evaluated by making a pilot application. A purposive sampling method was used, and the sample group suitable for the research topic and purpose was selected by confirming the participant. In addition, the research team did not direct the participants during the interview and observation, did not interfere with them, and quoted directly without adding comments. The literature supported the research findings by comparing them with other studies similar to the research. Finally, the final version of the categories and codes was prepared by taking the participants’ opinions.

Ethical Considerations

To carry out the research from the Zonguldak Bülent Ecevit University Human Research Ethics Committee (Protocol No: 978) of 11/12/2020 was obtained. To implement the study, from the Zonguldak Provincial Health Directorate (Number: E30707382-799, verbal and written permissions were obtained from the institution where the research was carried out. The participants were informed about the research. Written and verbal consent were obtained, and they were allowed to participate in the studies according to their voluntary consent.

Results

The information of the participants according to the personal information form is given in Table 2 in detail. The gender of all participants was female; two were 31–40 years old, three were 41–50 years old, and four were 51 and over. Three of the participants had an

| Questions |
|---------------------------------|
| 1. How has the COVID-19 pandemic process changed operating room practices in terms of nursing? |
| 2. How did the COVID-19 pandemic affect you as an operating room nurse? |
| 3. Did you intentionally or unintentionally operate on the positive case during the COVID-19 pandemic? If yes, how did you feel? |
| 4. What are you doing to relax mentally and psychologically during the COVID-19 pandemic? |
| 5. What things did you learn in nursing and personal terms during the COVID-19 pandemic? |
associate degree in nursing, and seven had a bachelor's degree in nursing. All participants had received training about the Covid-19 pandemic in their institution, and the content of this training was in-service training. One of the participants worked during the day, and nine worked day and night. One was observed for 40 hours a week, six for 4 to 48 hours, and three the 49 hours and more. Two participants stated that there was a decrease in cases. ‘...The number of cases has decreased...’ (N7). Some participants stated that the decision to postpone elective cases, one of the measures taken during the pandemic, was followed. However, elective cases were also started and applied during the pandemic process, along with emergency cases. ‘...The operations stopped, we did not work except for the emergency. Currently, elective surgeries are already being taken, but I am talking about operations stopped, we did not work except for the emergency. During the pandemic process, along with emergency cases.’ (N1).

Table 2 Characteristics of Participants (N = 10)

| Personal codes | Age      | Gender | Type of graduation | Duration of working as a nurse | Duration of working as an operating room nurse | Weekly working hours |
|----------------|----------|--------|--------------------|--------------------------------|-----------------------------------------------|---------------------|
| N1             | 57       | Woman  | Associate Degree   | 37 y                           | 33 y                                           | 41-48 h             |
| N2             | 60       | Woman  | Associate Degree   | 41 y                           | 41 y                                           | 40 h                |
| N3             | 52       | Woman  | Bachelor's Degree  | 33 y                           | 15 y                                           | 41-48 h             |
| N4             | 54       | Woman  | Bachelor's Degree  | 32 y                           | 32 y                                           | 41-48 h             |
| N5             | 56       | Woman  | Associate Degree   | 39 y                           | 39 y                                           | 41-48 h             |
| N6             | 47       | Woman  | Bachelor's Degree  | 29 y                           | 26 y                                           | 49 h or more        |
| N7             | 31       | Woman  | Bachelor's Degree  | 8 y                            | 8 y                                            | 49 h or more        |
| N8             | 40       | Woman  | Bachelor's Degree  | 20 y                           | 17 y                                           | 49 h or more        |
| N9             | 45       | Woman  | Bachelor's Degree  | 28 y                           | 25 y                                           | 49 h or more        |
| N10            | 46       | Woman  | Bachelor's Degree  | 28 y                           | 28 y                                           | 41-48 h             |

‘change in emergency-elective case practices,” “flexible working practice” seven codes were created.

Equipment sterility has been a crucial emphasis of OR nurses regarding a change in OR practices during the COVID-19 pandemic. ‘...We pay more attention in the surgery; we go into the surgery with N95 masks, equipment, keeping distance...” (N1). Most participants emphasized increased workload and working time during the COVID-19 pandemic. ‘...We were having a hard time, especially during the shifts, now there are times when we rest each other, but we entered the entire cases one after the other in the early days of the pandemic. Between the operations, 45 minutes, cleaning is done. After the cleaning, we are immediately called for surgery...” (N1).

Participants stated they lacked communication with the patient, such as confirming the patient before the case and talking to a patient. ‘We used to go to the sick person and ask direct questions, but now you cannot approach immediately; you protect yourself first. Now we will confirm the patient: what surgery will you have... First, you wear your mask; you get dressed, you ask from afar, communication with the patient has decreased...” (N3). The participants generally stated that there was a decrease in cases. ‘...The number of cases has decreased...” (N7). Some participants stated that the decision to postpone elective cases, one of the measures taken during the pandemic, was followed. However, elective cases were also started and applied during the pandemic process, along with emergency cases. ‘...The operations stopped, we did not work except for the emergency. Currently, elective surgeries are already being taken, but I am talking about the first three months and six months...” (N9).

Participants also stated that the flexible working system adopted by the Ministry of Health in the OR was not fully complied with and that there was not much change in this regard. ‘...Flexible working hours were applied for the first month. Then it is over...” (N2).

Theme 2: Effects of the Pandemic

According to the statements of the participants, "anxiety/fear", "negative psychological state", "difficulty with PPE", "lack of nurses", "longing/distance from family", "sleep disorders", "family problems" and "working in a different unit" eight codes were created. All participants also emphasized that nurses in the COVID-19 pandemic experienced anxiety and fear, especially because of the disease, transmission, and uncertainty of the disease. ‘...I experienced fear, unesi-ness, and risk of contagion. I was terrified that I would infect my wife. For example, anesthesia, a physician, and a nurse in an operation I entered became Covid positive, not me. I was so nervous...” (N3). Most participants stated that they were psychologically adversely affected by the COVID-19 pandemic. ‘...The news came that you would come to watch today; I cried; everywhere is dark, and the psychology of the desolate person had completely deteriorated. I thought about throwing myself. My psyche is completely gone...” (N5). All of the participants...
expressed the difficulties of working with personal protective equipment. "...Even though we had a hard time, even though our hands were bad and our eyes were fogged, we went into the surgery with equipment like that. My mask cut my nose; I could not fix it because you are sterile. Our profession has always had difficulties; we experienced it in this period as well..." (N1).

Some participants stated that one of the situations affecting them during the COVID-19 pandemic was the lack of nurses. "...The number of nurses has decreased in the OR. Our friends were sent to other clinics and intensive care units. ..." (N1). Most participants stated that they lived separately from their families and could not have physical contact even though they were in the same house. "...We lived in separate rooms for the first two months, and I never approached my husband. We even had dinner separately, I was eating on the balcony, my husband was in the room..." (N3). Participants stated that they had sleep problems. "...I had sleep problems; I could not sleep most of the time..." (N2). In addition, the participants stated that the family structure deteriorated during the pandemic; someone got divorced during this process, and they had trust problems in the family. "...Family troubles increased more during this time. There was unrest, for example, I was divorced, I had many family problems..." (N1). Some participants stated that they were assigned to the pandemic services for a certain period during the COVID-19 pandemic and had difficulties. "...I have been a nurse for eight years, but in the pandemic service, there was a problem because I did not know how to take an Electrocardiogram..." (N7).

Theme 3: Strategies for Coping With the Pandemic

According to the statements of the participants, seven codes were created: "communication with family," "breathing/sports exercises," "spirituality," "regular/healthy eating," "online shopping," "watching TV series/movies," and "accepting the process." Participants stated that they spent more time with their families during the COVID-19 pandemic and communicated more frequently. "...I talked to my brothers every day more than ever. I called my parents every day. If I used to call once every three days a week, now I call every day..." (N5). Most participants said they go out to the fresh air when they find time to relax, do sports at home and walk. "...I walked around the house for the sake of activity. I tried to act in the house..." (N5). Some participants said they pray and hope for the end of the COVID-19 pandemic, not to be infected with the virus, and not to infect their loved ones. "...I prayed that if I got sick, I would get over it as easily as possible, and if I got Covid-19, I would not go to intensive care..." (N3). Participants stated that they used different coping methods, such as cooking and eating, to relax psychologically during this process. "...I ate so I would not reduce my energy and body resistance. I drank lots of water and took vitamin C. I took additional vitamin supplements..." (N3). One of the coping methods that some of the participants experienced in this process was the online shopping application. "We shopped online, of course, more in this process. I did a lot of food shopping to avoid going to the market..." (N1). In addition, the participants stated that they watched TV series or movies. "...I watched a foreign TV series..." (N9). One of the participants stated that she was relieved to think that COVID-19 is a common problem that covers everyone and that a solution will be found. "...Something the world is experiencing is not just for us; it is a common problem everyone is experiencing; one day, it will pass; I thought there would be hope and a solution. It was like psychological relief..." (N4).

Theme 4: Learned From the Pandemic

According to the expressions emphasized by the participants, eight codes were created, namely "the importance of life/health," "the importance of family," "worthlessness of the nursing profession," "material injustice," and "acquisition of professional experience," "the importance of personal protection," "lack of union support" and "occupational satisfaction." Participants stated that the most important thing they learned from the COVID-19 pandemic is the importance of life, breathing, and health. "...I realized that I lived very comfortably and that I could no longer live comfortably. I understood the value of health..." (N3). Some participants said they better understood the family's value in the COVID-19 pandemic. "...My relative passed away in the early stages of this pandemic. I learned that it is necessary to hold on to the family more..." (N2). Again, most participants stated that the first thing they learned from the COVID-19 pandemic was that their profession was worthless and worthless. "...The hardest working nurse, but we saw the worthlessness; it was the nurses working in the field. The nurse took this pandemic. The nurse has no value anyway; in this process, the nurse has been put on more. Physicians gave instructions over the phone, and nurses did. There was injustice and labor injustice..." (N4). Participants emphasized that they lived unfairly during the COVID-19 pandemic and that there are significant financial differences and inequalities between other occupational groups and their colleagues. "...There was financial inequality. I am an undergraduate graduate, and my friend who taught me to work in the pandemic service received less money from me because he graduated from high school. We had inequality within the occupational group, and there was a big difference among the doctors. I am not saying I should get the same money as the doctor. However, there should not be that much difference..." (N8). Some participants stated that they worked in the pandemic units for a period, learned unit nursing, and experienced professional experience there. "...I had professional experience. I worked in the Covid unit for a while and learned unit nursing..." (N7). A few participants stated that they understood the importance of personal protection and cleanliness in this process and that individual hygiene was necessary in all cases. "...I realized that we must behave differently at work and be more careful. We used to sit together and rub our hands everywhere; I learned that these things should not happen..." (N3). In addition, some participants stated that the health unions did not act against health professionals during the pandemic. "...The unions did not do anything anyway. What did they defend..." (N5). One of the participants expressed that she felt spiritual pleasure in her nursing profession during this process. "...I felt like the end of the world had come. We went to see the patients without sleeping; it aroused spiritual pleasure in me..." (N10).

Discussion

Theme 1: Changing System/Practices in the OR

This study determined that the participants entered the operations by paying attention to personal protective equipment and sterility. In a study by Loeb et al.11 on caregivers of SARS patients, it was stated that the risk of contracting SARS infection would be reduced from 6% to 1.4% if health care workers used masks continuously. The workload and duration of nurses increased with the use of personal protective equipment and tiring working conditions in the COVID-19 pandemic. Sun et al.12 conducted a study with 20 nurses. They found that during the pandemic process, the working hours and workloads of all nurses participating in the study increased proportionally to 1.5 to 2 times the normal.13 In this study, the OR nurses experienced a lack and distance in their communication with the patient. Parallel to our research result, in a study conducted in Italy, nurses reported that they could not safely enter the patient rooms and touch the patients in terms of the risk of contamination.13 Participants reported a decrease in cases in the COVID-19 pandemic. In the literature, a decrease was found in the total number of patients, 87.8% of whom underwent emergency surgery due to the epidemic.14,15 The loss of income from elective cases in the COVID-19 pandemic has severely
impacted health care institutions. Considering the income in elective cases and the increasing needs of hospitals during the pandemic, it will be inevitable to start the application of elective cases during the pandemic process in line with our research findings. In this study, nurses, stated that flexible working in the OR was not followed often, as the practice did not last long when it was followed. Guler et al. conducted a study with 18 nurses during the pandemic and concluded that nurses experienced fear of infection and death and felt this fear more intensely at the beginning of the pandemic. In this study, we observed that nurses were negatively affected psychologically by the COVID-19 pandemic. Tan et al. conducted a study with 470 health care professionals to examine psychological distress, depression, anxiety, and stress. They reported that approximately 15% of the participants experienced anxiety, approximately 9% had depression, and 7% had stress. In our study, we found that nurses were uncomfortable wearing personal protective equipment and working under the equipment, and some experienced physical discomfort while working with the equipment. Corley et al. in a study in which the experiences of nurses and health personnel caring for patients in the intensive care unit during the H1N1 epidemic were examined, found that some of the participants reported that it was challenging to wear equipment during long working hours and how uncomfortable the equipment was. It has been reported that one of the conditions affecting OR nurses during the COVID-19 pandemic is the lack of nurses. In a study conducted with 12 nurses caring for COVID-19 patients in a hospital in Iran, it was reported that there were personnel shortages and restrictions. Therefore, there were disruptions in patient care. The authors stated that the participants experienced longing because they lived separately from their family members and could not establish physical contact. Sadati et al. stated that in the COVID epidemic, nurses are trying to create a kind of physical distance between themselves and their families. In this study, we determined that the nurses had sleep problems. Cao et al. conducted a study with health personnel in the fever clinic of a hospital in Beijing and found that 29.7% of the participants had sleep problems and sometimes needed sleeping pills. Domestic problems, stigma, divorces, and violence have increased more in the COVID-19 epidemic. In this study, the family structure of nurses deteriorated during the pandemic, and there were problems with a family trust.

Theme 3: Strategies for Coping With the Pandemic

With the onset of the pandemic, health care professionals increased the frequency of contact with their family members and communicated with them at least one to two times a day. In this study, we determined that one of the strategies to cope with the pandemic was breathing or sports exercises. In a study by Cao et al. on the basic needs and psychological wellbeing of medical workers, when the participants were asked about their strategies to cope with the pandemic, some answered sports. Sahin conducted a study with health care workers who had experienced COVID-19 and observed that health care professionals tended towards religious beliefs to overcome the disease more quickly and support themselves. Similar to the study’s results, it was our participants reported that nurses pray and hope during the Covid-19 process, and used a coping method by eating healthy and regularly. Similarly, in the study conducted by Sahin, it was stated that the participants ate a balanced and healthy diet during this period, changed their diet and fed more regularly, and took additional food supplements. In this study, we found that nurses shopped online during the quarantine days during the COVID-19 pandemic. Güven determined that there was a trend toward online shopping applications throughout the world due to the quarantine processes of individuals in the COVID-19 pandemic. They found an increase in e-commerce volume in Turkey and other countries in the world compared to the data of previous years. Participants emphasized that they watch TV series or movies as a strategy to cope with COVID-19. Yanik and Yesilcan examined the effects of social isolation on nursing students and determined that the participants created positive results for themselves by watching movies in this process.

Theme 4: Learned From the Pandemic

In this study, the participants discussed the importance of breathing and health. Furthermore, in a qualitative study conducted in China, a nurse’s expression was “...This experience made me feel that life is precious...” As a result of the research, we determined that the participants understood the importance of being healthy. This study reported the importance of family presence during the pandemic period. In other studies, it has been seen that the emphasis is on getting to know the family and making sense of it. Hatun et al., in their study determined that the participants gained awareness, such as spending more time with their families and understanding the value of the family better during the pandemic process. The nurses who participated in our research stated that they saw their profession as worthless and unimportant in this process. The professional group worked the most and received the least material and moral value. Gunawan et al., in their study to examine nurses’ experiences in the COVID-19 pandemic, one participant stated that nurses were only a pawn in this process and were the least valued person. In this study, nurses experienced financial injustice during the COVID-19 pandemic. The participants’ statements determined that they did not receive any additional payments or rewards, despite the increasing workload and intensity. The Yuncu and Yilan work in pandemic clinics is similar to our research results. Liu et al. examined the experiences of healthcare providers, and found that health care personnel were proud of their courage to overcome difficulties and that they were professionally qualified for this challenging process in a short time. In this study, the participants reported that nurses better understand the importance of personal protection in the COVID-19 pandemic. In a study by Gürel and Er, participants emphasized that the importance of cleaning would result in less exposure to disease. In this study, one of the participants, stated that the experience of spiritual pleasure and professional satisfaction in the profession during this process. On the other hand, Said and El-Shafei, in their study in Egypt, found that more than half of the nurses caring for COVID-19 patients reported a low level of professional satisfaction.

Research Limitations

In this study, data collection from a single center and only one interview with each participant are the limitations of the research.

Conclusion

In this study, we determined that the OR nurses experienced a change in using personal protective equipment and giving importance to sterility. OR nurses, who discovered different coping methods to cope with the Covid-19 pandemic, also experienced the value of life, the fact that the profession has no material and moral value, and that they experienced different professional experiences in this process. In
line with these results, the following suggestions can be made; the working conditions of nurses should be improved, a flexible working system should be applied, and sufficient rest intervals should be given to nurses. The fairness of the rewards and working conditions of the nurses are directly proportional to the increase in the value and prestige of the nursing profession. Nursing organizations and health unions can offer solutions to nurses’ professional problems, ensuring that the nursing profession is in a more potent and professional position. Nurses psychologically affected by the COVID-19 pandemic should be encouraged to receive psychological support and treatment, and it is essential to plan and implement psychological intervention programs.

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