

ORIGINAL ARTICLE

Determining anxiety levels and related factors in operating room nurses during the COVID-19 pandemic: A descriptive study

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Abstract

Background: Health care professionals responsible for care and treatment during outbreaks are more likely to experience anxiety, depression, insomnia and stress.

Aim: This study investigated operating room nurses' anxiety levels and related factors during the COVID-19 pandemic.

Methods: The research was conducted between July and September 2020. The sample consisted of 192 operating room nurses. Data were collected using a descriptive questionnaire and the Beck Anxiety Inventory (BAI).

Results: Participants had moderate levels of anxiety. The risk factors associated with high levels of anxiety included having chronic diseases, working with patients causing worry, fear of contracting COVID-19 and transmitting it to loved ones, incompetence of hospitals in managing the pandemic, lack of support from hospital managers, taking few breaks and working long shifts due to preventive measures at the workplace.

Conclusion and Implications of Nursing Management: The results show that operating room nurses have had moderate anxiety levels since the onset of the pandemic. Therefore, it is critical to regularly identify and meet their mental and emotional needs to implement early preventive interventions. Identifying risk factors will help recognize anxiety in operating room nurses and take measures to protect their mental health while working with high-risk patients in different clinics during the pandemic. What is more, managers should draw up action plans for extraordinary conditions, such as a pandemic.

KEYWORDS

anxiety, COVID-19, operating room nurse, pandemic

What is known about this topic?

- Rising infection and mortality rates by COVID-19 coupled with everyday problems cause stress, depression and anxiety.
- Nurses are the first to encounter people with or at risk of COVID-19. They work relentlessly to fight the pandemic of the twenty-first century.
- Few studies investigate the effect of the pandemic on anxiety in health care professionals.
- There is no published research on the effect of the pandemic on anxiety in operating room nurses.

What does this paper add from an international perspective?

- This study investigated operating room nurses' anxiety levels and related factors during the COVID-19 pandemic.
- Operating room nurses had moderate levels of anxiety.
- Operating room nurses should be provided with counselling to meet their psychological needs and help them develop stress management and coping skills.

1 | INTRODUCTION

The 2019-nCoV, which was first reported in December in Wuhan/China, is known as "Coronavirus" (Huang et al., 2020). The World Health Organization (WHO) named the disease "COVID-19" on 11 February 2020 and classified the outbreak as a pandemic in March 2020. Turkey announced its first confirmed case of COVID-19 on 10 March 2020 (WHO, 2020). The virus spread rapidly and caused respiratory problems, resulting in a significant number of deaths (CDC, 2020; Wu & McGoogan, 2020). High infection and mortality rates coupled with everyday problems have caused stress, depression and anxiety in people (Liu et al., 2020a,2020b).

Nurses are the most important part of the health care workforce as they are responsible for infection prevention, control, isolation and public and global health (Schwerdtle et al., 2020; Smith et al., 2020). Nurses are the first to encounter people with or at risk of COVID-19. They have been working day and night to fight the pandemic since its onset. Care and different types of nursing positions are potential sources of stress for nurses because not only do they have to cope with an ever-expanding workload, but they also must follow pandemic-related health and safety protocols while protecting themselves and their families. In the COVID-19 period, like any other pandemics, nurses are concerned about their own and their families' health because they are at high risk of contracting deadly viruses. They also face stress, anxiety, fear and dilemmas because they are ethically responsible for providing quality care, no matter the circumstances (Cai et al., 2020; Kim & Choi, 2016). Lin et al. (2020) reported that new nurses experienced mild anxiety. Hacımusalar et al. (2020) found that nurses had had higher anxiety levels than other health care professionals in Turkey since the onset of the pandemic.

The simultaneous lack of personal protective equipment due to the workplace environment, high nurse-patient ratio, inexperience and inadequate administrative support makes nurses more vulnerable to depression and other mental problems (Kim, 2018). Health care professionals responsible for care and treatment during outbreaks are more likely to experience anxiety, depression, insomnia and stress (Lee et al., 2018; Liu et al., 2020a,2020b; Shanafelt et al., 2020). Montemurro (2020) highlighted that the burden of trauma, mental problems and the fear of contracting and transmitting COVID-19 resulted in an increased incidence of suicide among health care professionals, including nurses. Consequently, many health care professionals worldwide have died of COVID-19 (Liu et al., 2020a,2020b). Therefore, nurses' mental and psychosocial

health is as important and should be supported as their physical health during the pandemic.

Operating room nurses are specialized nurses. According to the Turkish Nursing Regulations (TNR), operating room nurses are responsible for assisting the surgical team, maintaining sterile medical supplies during surgery and supervising care for postoperative patients. They are also responsible for taking measures for patient safety. The COVID-19 pandemic has increased the nurse-to-patient ratio and the demand for hospital and critical care beds. Furthermore, far too many nurses have contracted the virus. Therefore, operating room nurses have been assigned to units outside their primary service lines and have performed tasks outside their scope of practice since the onset of the pandemic. Most studies on pandemics are epidemiological studies that focus on prevention, control, diagnosis and treatment. However, there is little research on the effect of the pandemic on anxiety among health care professionals (Cai et al., 2020; Şahin et al., 2020). Moreover, there is no published research investigating the effect of the pandemic on anxiety among operating room nurses. Therefore, this study investigated operating room nurses' anxiety levels and related factors during the pandemic.

1.1 | Research questions

The research questions are as follows:

- What level of anxiety do operating room nurses have during the COVID-19 pandemic?
- What factors contribute to anxiety in operating room nurses during the COVID-19 pandemic?

2 | METHODS

This descriptive study investigated the anxiety levels and related factors in operating room nurses during the COVID-19 pandemic.

2.1 | Setting and sample

The research was conducted between July and September 2020 in three university hospitals and 16 education and research and state hospitals in Ankara/Turkey. The study population consisted of 656 operating room nurses from hospitals that serve as pandemic

hospitals. Chen et al. (2016) reported a mean Beck Anxiety Inventory (BAI) score of 11.32 ± 8.64 in nurses. We performed a power analysis based on the assumption that BAI scores might deviate $\pm 15\%$ from what Chen et al. (2016) found. The result showed that a sample of 190 would be large enough to detect significant differences (power of 95%, $\alpha = 0.05$). The inclusion criteria were being an operating room nurse and volunteering. Therefore, the sample consisted of 192 voluntary nurses.

2.2 | Data collection forms

Data were collected using a descriptive questionnaire developed by the researchers and the BAI.

The descriptive questionnaire consisted of 24 items on sociodemographic and workplace characteristics (age, gender, marital status, chronic diseases, etc.) and anxiety-related factors (having been tested for COVID-19, being assigned to units outside their primary service lines, receiving support from managers, access to personal protective equipment, performing tasks outside their scope of practice, etc.).

The Beck Anxiety Inventory was developed by Beck et al. (1988) and adapted to Turkish by Ulusoy et al. (1998). It is a 21-item measure used to assess the severity of symptoms of anxiety. The items are scored on a four-point Likert scale ("0 = not at all", "1 = mildly", "2 = moderately", and "3 = severely"). The total score ranges from 0 to 63, with higher scores indicating more severe anxiety ("0–7 = minimal anxiety", "8–15 = mild anxiety", "16–25 = moderate anxiety" and "26–63 = severe anxiety").

2.3 | Data collection

The data were collected online due to growing concerns about the threat posed by the pandemic and nationwide preventive measures and restrictions. The scales were created on Google Forms. The managers of operating rooms were sent an electronic link via e-mail or WhatsApp and asked to share it with all participants. Initial participants were asked to send the link of the questionnaire to nurses who met the research criteria. Prior to participation, all nurses were informed of the purpose and procedure, and online written consent was obtained from those who agreed to participate.

2.4 | Data analysis

The data were analysed using the Statistical Package for Social Sciences (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.). Numbers and percentages were used for descriptive analysis. The Kolmogorov-Smirnov test was used for normality testing. An ordered logistic regression analysis was used to determine the relationship between the dependent variable (anxiety) and independent variables (age, gender, marital status and questions about COVID-19).

2.5 | Ethical considerations

The study was approved by the Non-Interventional Human Studies Ethics Committee of a university (12/06/2020/E-2877) and the General Directorate of Health Services of the Ministry of Health (Date: 12/06/2020 and No: E-2877). Online consent was obtained from nurses prior to participation.

3 | RESULTS

3.1 | Demographic and workplace characteristics

The mean age was 36.67 ± 7.28 years. Of the participants, 90.6% were women, 67.7% were married, 33.3% had 0–5 years of work experience as operating room nurses, 20.3% had at least one chronic disease, 71.9% had been tested for COVID-19 before (2.1% tested positive), 5.2% had a relative who died from COVID-19, 21.4% had had longer shifts since the onset of the pandemic, 52.6% were assigned to units outside their primary service lines, 49.0% were assigned to tasks that were out of their scope of practice, 22.4% received training outside their primary service lines, 40.1% were almost always worried about their surgical patients contracting the virus, 53.1% were almost always worried about bringing the virus home to their families, 68.2% believed that the hospitals they worked for managed the pandemic well, 59.4% received no support from their managers, 31.3% could not take enough breaks at work, 70.8% were briefed by their hospitals about how to protect against COVID-19, 40.1% stated that the hospitals they worked for had undertaken organisational changes since the onset of the pandemic, 39.6% had no difficulty accessing personal protective equipment, and 31.3% had increased workload due to preventive measures at the workplace (Table 1). Participants had a mean BAI score of 15.08 ± 10.91 during the COVID-19 pandemic, indicating severe (17.2%), moderate (24.5%) and mild (30.2%) anxiety (Table 2).

3.1.1 | Participants' characteristics by their anxiety levels

The risk factors that significantly increased the participants' anxiety levels were chronic diseases, surgical patients causing worry, incompetent hospital management, fear of contracting COVID-19 and transmitting it to family members, no support from hospital managers, insufficient breaks at work and an increased workload due to preventive measures at the workplace ($p < .05$; Table 2).

3.2 | Logistic regression results

Although not shown in Table, participants' anxiety levels were not affected by the sociodemographic and workplace characteristics of "marital status", "gender" and "work experience" and the anxiety-related

TABLE 1 Participants' experience of COVID-19 pandemic (*n*:192)

| Items | No | % |
|--|-----|------|
| Getting tested for COVID-19 | | |
| Yes | 138 | 71.9 |
| No | 54 | 28.1 |
| Having been tested positive for COVID-19 | | |
| Yes | 4 | 2.1 |
| No | 188 | 97.9 |
| Having a family member who tested positive for COVID-19 | | |
| Yes | 18 | 9.4 |
| No | 174 | 90.6 |
| Having a colleague who tested positive for COVID-19 | | |
| Yes | 38 | 80.2 |
| No | 154 | 19.8 |
| Having a relative who died from COVID-19 | | |
| Yes | 10 | 5.2 |
| No | 182 | 94.8 |
| Increase in working hours | | |
| Yes | 41 | 21.4 |
| No | 151 | 78.6 |
| Being assigned to a unit outside your primary service line | | |
| Yes | 101 | 52.6 |
| No | 91 | 47.4 |
| Being assigned to tasks outside your scope of practice | | |
| Yes | 94 | 49.0 |
| No | 11 | 5.7 |
| Having surgical patients who cause worry | | |
| Never | 11 | 5.7 |
| Rarely | 9 | 4.7 |
| Sometimes | 36 | 18.8 |
| Often | 59 | 30.7 |
| Almost always | 77 | 40.1 |
| Testing surgical patients for COVID-19, <i>n</i> (%) | | |
| Yes | 90 | 46.9 |
| No | 102 | 53.1 |
| Fear of transmitting the COVID-19 virus to your family members, <i>n</i> (%) | | |
| Never | 2 | 1.0 |
| Rarely | 7 | 3.6 |
| Sometimes | 17 | 8.9 |
| Often | 35 | 18.2 |
| Almost always | 131 | 68.2 |
| Considering the hospital management competent of managing the pandemic, <i>n</i> (%) | | |
| Yes | 78 | 40.6 |
| No | 114 | 59.4 |
| Receiving support from hospital managers during the pandemic | | |
| Never | 47 | 24.5 |
| Rarely | 46 | 24.0 |

(Continues)

TABLE 1 (Continued)

| Items | No | % |
|--|-----|------|
| Sometimes | 49 | 25.5 |
| Often | 45 | 23.4 |
| Always | 5 | 2.6 |
| Taking enough breaks at work | | |
| Yes | 132 | 68.8 |
| No | 60 | 31.3 |
| Getting briefed on possible organisational changes | | |
| No | 49 | 25.5 |
| Partly | 66 | 34.4 |
| Yes | 77 | 40.1 |
| Having difficulty accessing personal protective equipment | | |
| Never | 76 | 39.6 |
| Rarely | 40 | 20.8 |
| Occasionally | 48 | 25.0 |
| Most of the time | 28 | 14.6 |
| Increased workload due to preventive measures at the workplace | | |
| Never | 19 | 9.9 |
| Rarely | 15 | 7.8 |
| Sometimes | 41 | 21.4 |
| Often | 57 | 29.7 |
| Almost always | 60 | 31.3 |
| Receiving training before being assigned to a unit outside your primary service line, <i>n</i> (%) | | |
| Yes | 136 | 70.8 |
| No | 56 | 29.2 |

factors of "having been tested for COVID-19", "having a family member who tested positive for or died from COVID-19", "longer shifts", "being assigned to units outside their primary service lines and having to perform tasks outside their scope of practice" and "having difficulty accessing personal protective equipment". Participants without chronic diseases reported 2.63 times as much anxiety as those with chronic diseases ($p < .05$). Participants who had taken a COVID-19 test before reported 1.85 times as much anxiety as those who had not ($p < .05$). Although working with worrisome surgical patients did not cause a statistically significant difference in anxiety levels, participants working with patients who always caused worry reported four times as much anxiety as those working with patients who never caused worry ($p = .025$). Participants working with patients who did not take a COVID-19 test reported 1.86 times as much anxiety as those working with patients who took a COVID-19 test because the former were more afraid of transmitting the virus to their families ($p < .05$). Participants who were always worried about transmitting the virus to their families reported 5.5, 10, 4.17 and 2.44 times as much anxiety as those who were never, rarely, sometimes and often worried about transmitting the virus to their families, respectively ($p = .001$). Participants who considered hospital management incompetent reported 2.31 times as much anxiety as those who considered hospital management competent. Participants who received no support from hospital managers

reported 8.88 times as much anxiety as those who always received support from hospital managers. Participants who rarely received support from hospital managers reported 6.89 times as much anxiety as those who always received support from hospital managers ($p < .05$). Participants who did not have enough breaks at work reported 1.88 times as much anxiety as those who did ($p < .05$). Receiving training before being assigned to a unit outside their primary service lines did not affect the participants' anxiety levels. Participants who were not briefed on possible organisational changes reported 2.22 times as much anxiety as those who were ($p < .05$). Participants who often had difficulty accessing personal protective equipment reported 2.43 times as much anxiety as those who never had difficulty accessing it ($p > .05$). Participants with a significant increase in workload since the onset of the pandemic reported 3.22, 5, 2 and 2.27 times as much anxiety as those who never, rarely, sometimes and often had to do overtime, respectively ($p = .010$; Table 3).

4 | DISCUSSION

The COVID-19 pandemic has caused both physical and mental problems (Qiu et al., 2020). This study investigated anxiety and related factors in operating room nurses during the COVID-19 pandemic.

TABLE 2 Participants' characteristics by anxiety levels

| Anxiety level | | | | | |
|---|---------------|-----------|-----------|-----------|-----------------------------|
| Mean \pm SD: 15.08 \pm 10.91 | | | | | |
| Min–Max: 0–48 | | | | | |
| Anxiety frequency according to Beck Anxiety Inventory, (0–63) | | | | | Participants <i>n</i> = 192 |
| | | | | | <i>n</i> (%) |
| No/minimal (0–7) | | | | | 54 (28.1) |
| Mild (8–15) | | | | | 58 (30.2) |
| Moderate (16–25) | | | | | 47 (24.5) |
| Severe (26–63) | | | | | 33 (17.2) |
| Characteristics | Anxiety level | | | | <i>p</i> -Value |
| | Not at all | Mild | Moderate | Severe | |
| Gender, <i>n</i> (%) | | | | | |
| Woman | 46 (26.4) | 53 (30.5) | 43 (27.4) | 32 (18.4) | .318 |
| Man | 8 (44.4) | 5 (27.8) | 4 (22.2) | 1 (5.6) | |
| Marital status, <i>n</i> (%) | | | | | |
| Married | 39 (30.0) | 39 (30.0) | 28 (21.5) | 24 (18.5) | .510 |
| Single | 15 (24.2) | 19 (30.6) | 19 (30.6) | 9 (14.5) | |
| Work experience (year), <i>n</i> (%) | | | | | |
| 0–5 | 6 (20.7) | 8 (27.6) | 9 (31.0) | 6 (20.7) | .968 |
| 6–10 | 8 (28.6) | 10 (30.0) | 5 (17.9) | 5 (17.9) | |
| 11–15 | 14 (32.6) | 11 (25.6) | 11 (25.6) | 7 (16.3) | |
| >15 | 26 (28.3) | 29 (31.5) | 22 (23.9) | 15 (16.3) | |
| Work experience as an operating room nurse (year), <i>n</i> (%) | | | | | |
| 0–5 | 19 (29.7) | 18 (28.1) | 19 (29.7) | 8 (12.5) | .871 |
| 6–10 | 13 (34.2) | 11 (28.9) | 7 (18.4) | 7 (18.4) | |
| 11–15 | 10 (27.0) | 12 (32.4) | 7 (18.9) | 8 (21.6) | |
| >15 | 12 (22.6) | 17 (32.1) | 14 (26.4) | 10 (18.9) | |
| Chronic diseases, <i>n</i> (%) | | | | | |
| Yes | 4 (10.3) | 12 (30.8) | 12 (30.8) | 11 (28.2) | .020 |
| No | 50 (32.7) | 46 (30.1) | 35 (22.9) | 22 (14.4) | |
| Getting tested for COVID-19, <i>n</i> (%) | | | | | |
| Yes | 35 (25.4) | 39 (28.3) | 36 (26.1) | 28 (20.3) | .157 |
| No | 19 (35.2) | 19 (35.2) | 11 (20.4) | 5 (9.3) | |
| Having been tested positive for COVID-19, <i>n</i> (%) | | | | | |
| Yes | 1 (25.0) | 1 (25.0) | 1 (25.0) | 1 (25.0) | .978 |
| No | 53 (28.2) | 57 (30.3) | 46 (24.5) | 32 (17.0) | |
| Having a colleague who tested positive for COVID-19, <i>n</i> (%) | | | | | |
| Yes | 43 (27.9) | 49 (31.8) | 35 (22.7) | 27 (17.5) | .635 |
| No | 11 (28.9) | 9 (23.7) | 12 (31.6) | 6 (15.8) | |
| Having a family member who tested positive for COVID-19, <i>n</i> (%) | | | | | |
| Yes | 8 (44.4) | 5 (27.8) | 3 (16.7) | 2 (11.1) | .417 |
| No | 46 (26.4) | 53 (30.5) | 44 (25.3) | 31 (17.8) | |
| Having a relative who died from COVID-19, <i>n</i> (%) | | | | | |
| Yes | 1 (10.0) | 3 (30.0) | 3 (30.0) | 3 (30.0) | .499 |
| No | 53 (29.1) | 55 (30.2) | 44 (24.2) | 30 (16.5) | |

(Continues)

TABLE 2 (Continued)

| Characteristics | Anxiety level | | | | p-Value |
|---|---------------|-----------|-----------|-----------|-------------|
| | Not at all | Mild | Moderate | Severe | |
| Increase in working hours | | | | | |
| Yes | 9 (22.0) | 13 (31.7) | 7 (17.1) | 12 (29.3) | .096 |
| No | 45 (29.8) | 45 (29.8) | 40 (26.5) | 21 (13.9) | |
| Being assigned to a unit outside your primary service line, n (%) | | | | | |
| Yes | 31 (30.7) | 28 (27.7) | 25 (24.8) | 17 (16.8) | .811 |
| No | 23 (25.3) | 30 (33.0) | 22 (24.2) | 16 (17.6) | |
| Being assigned to tasks outside your scope of practice, n (%) | | | | | |
| Yes | 27 (28.7) | 25 (26.6) | 24 (25.5) | 18 (19.1) | .289 |
| No | 6 (54.5) | 3 (27.3) | 1 (9.1) | 1 (9.1) | |
| Taking on additional tasks outside the scope of your position, n (%) | | | | | |
| Yes | 5 (22.7) | 7 (31.8) | 7 (31.8) | 3 (13.6) | .799 |
| No | 49 (28.8) | 51 (30.0) | 40 (23.5) | 30 (17.6) | |
| Having surgical patients who cause worry, n (%) | | | | | |
| Never | 7 (63.6) | 1 (9.1) | 1 (9.1) | 2 (18.2) | .003 |
| Rarely | 2 (22.2) | 3 (33.3) | 3 (33.3) | 1 (11.1) | |
| Sometimes | 15 (41.7) | 9 (25.0) | 5 (13.9) | 7 (19.4) | |
| Often | 9 (15.3) | 23 (39.0) | 23 (39.0) | 4 (6.8) | |
| Almost always | 21 (27.3) | 22 (28.6) | 15 (19.5) | 19 (24.7) | |
| Testing surgical patients for COVID-19, n (%) | | | | | |
| Yes | 35 (34.3) | 31 (30.4) | 23 (22.5) | 13 (12.7) | .122 |
| No | 19 (21.1) | 27 (30.0) | 24 (26.7) | 20 (22.2) | |
| Fear of transmitting the COVID-19 virus to their families, n (%) | | | | | |
| Never | 1 (50.0) | 1 (50.0) | 0 (0.0) | 0 (0.0) | .027 |
| Rarely | 5 (71.4) | 1 (14.3) | 1 (14.3) | 0 (0.0) | |
| Sometimes | 8 (47.1) | 7 (41.2) | 1 (5.9) | 1 (5.9) | |
| Often | 14 (40.0) | 10 (28.6) | 7 (20.0) | 4 (11.4) | |
| Almost always | 26 (19.8) | 39 (29.8) | 38 (29.0) | 28 (21.4) | |
| Considering the hospital management competent of managing the pandemic, n (%) | | | | | |
| Yes | 32 (41.0) | 20 (25.6) | 18 (23.1) | 8 (10.3) | .006 |
| No | 22 (19.3) | 38 (33.3) | 29 (25.4) | 25 (21.9) | |
| Receiving support from hospital managers during the pandemic, n (%) | | | | | |
| Never | 8 (17.0) | 15 (31.9) | 10 (21.3) | 14 (29.8) | .015 |
| Rarely | 9 (19.6) | 12 (26.1) | 19 (41.3) | 6 (13.0) | |
| Sometimes | 15 (30.6) | 17 (34.7) | 8 (16.3) | 9 (18.4) | |
| Often | 19 (42.2) | 12 (26.7) | 10 (22.2) | 4 (8.9) | |
| Always | 3 (60.0) | 2 (40.0) | 0 (0.0) | 0 (0.0) | |
| Taking enough breaks at work, n (%) | | | | | |
| Yes | 41 (31.1) | 41 (31.1) | 34 (25.8) | 16 (12.1) | .046 |
| No | 13 (21.7) | 17 (28.3) | 13 (21.7) | 17 (28.3) | |
| Receiving training before being assigned to a unit outside your primary service line, n (%) | | | | | |
| Yes | 35 (25.7) | 43 (31.6) | 35 (25.7) | 23 (16.9) | .665 |
| No | 19 (33.9) | 15 (26.8) | 12 (21.4) | 10 (17.9) | |

(Continues)

TABLE 2 (Continued)

| Characteristics | Anxiety level | | | | p-Value |
|---|---------------|-----------|-----------|-----------|-------------|
| | Not at all | Mild | Moderate | Severe | |
| Being briefed on possible organisational changes | | | | | |
| Yes | 28 (36.4) | 21 (27.3) | 20 (26.0) | 8 (10.4) | .154 |
| Partly | 16 (24.2) | 24 (36.4) | 13 (19.7) | 13 (19.7) | |
| No | 10 (20.4) | 13 (26.5) | 14 (28.6) | 12 (24.5) | |
| Having difficulty accessing personal protective equipment | | | | | |
| Never | 24 (31.6) | 26 (34.2) | 19 (25.0) | 7 (9.2) | .157 |
| Rarely | 14 (35.0) | 7 (17.5) | 10 (25.0) | 9 (22.5) | |
| Occasionally | 10 (20.8) | 19 (39.6) | 10 (20.8) | 9 (18.8) | |
| Often | 6 (21.4) | 6 (21.4) | 8 (28.6) | 8 (28.6) | |
| Increased workload due to preventive measures at the workplace, n (%) | | | | | |
| Never | 8 (42.1) | 4 (21.1) | 6 (31.6) | 1 (5.3) | .046 |
| Rarely | 8 (53.3) | 3 (20.0) | 3 (20.0) | 1 (6.7) | |
| Sometimes | 9 (22.0) | 17 (41.5) | 11 (26.8) | 4 (9.8) | |
| Often | 18 (31.6) | 19 (33.3) | 10 (17.5) | 10 (17.5) | |
| Always | 11 (18.3) | 15 (25.0) | 17 (28.3) | 17 (28.3) | |

Bold values are indicates $p < .05$.

Health care professionals experience mental problems during pandemics because they work in very harsh conditions to care for and treat a significant number of patients. One of those mental problems is anxiety (Lee et al., 2018; Liu et al., 2020a,2020b). Sakaoğlu et al. (2020) reported high anxiety among Turkish health care professionals, while Liu et al. (2020a,2020b) found high anxiety among Chinese nurses during the COVID-19 pandemic. However, our participants had moderate anxiety levels, which might be because we conducted the study when Turkey began to get the pandemic under control. Moreover, almost half of the participants were not working with patients diagnosed with COVID-19.

Participants with chronic diseases reported lower anxiety than those without chronic diseases, probably because the former were more careful about protecting themselves from the disease than the latter. However, research shows a high prevalence of anxiety and depression among people with chronic diseases (Alenazi et al., 2020; Şahin et al., 2020).

Participants who had been tested for COVID-19 before reported higher anxiety than those who had not, probably due to the symptoms they presented, the experience of being tested itself and the likelihood of testing positive. Participants working with patients causing worry were more likely to experience anxiety because those patients were not being tested for COVID-19. Therefore, the participants had no idea whether they were at risk of contracting the virus and transmitting it to their loved ones.

Participants who were afraid of infecting their families experienced more anxiety because they were more likely to contract it from patients and transmitting it to their loved ones, causing them to fall ill or even die. Nurses working with patients with deadly viruses are extremely worried about their own and their family members'

well-being (Cai et al., 2020; Kim & Choi, 2016). Wang et al. (2020) investigated how Chinese people reacted to the COVID-19 pandemic and found that seven out of ten were concerned about the risk of infecting their family members.

Participants who considered hospital management incompetent and were neither supported nor briefed on possible organisational changes by the hospital management experienced more anxiety, because they probably think that managers do not know what to do when faced with an outbreak, such as COVID-19. Research also shows that short-staffed shifts and the lack of experience, administrative support and personal protective equipment are stress factors for nurses (Kim, 2018; Shih et al., 2009). Stress, inadequate protective equipment and support systems, and extended shifts can also cause anxiety in nurses. Anxiety among health care professionals during the COVID-19 pandemic is related to organisational factors, such as little information or misinformation about COVID-19, incompetent hospital managers, unpreparedness for the pandemic and problems with accessing COVID-19 tests (Pappa et al., 2020).

Participants with too few rest breaks had more anxiety because they were exhausted, had difficulty meeting their basic needs and were constantly exposed to workplace stressors. Research also shows that nurses working long shifts experience anxiety as they cannot make time for themselves (Tambağ et al., 2015). Participants with increased workload due to preventive measures at the workplace reported more anxiety, probably because it takes too much time to put on and take off personal protective equipment, which also makes them feel physically uncomfortable (sweating, restricting movements, etc.). The increased workload is associated with stress and anxiety among operating room personnel during the COVID-19 pandemic (Koksal et al., 2020; Mo et al., 2020). Although these problems are of

TABLE 3 Ordered logistic regression for anxiety risk factors by demographic characteristics

| Factors | Model fitting | | β | SE_{β} | p | OR ^a (95% CI) |
|--|---------------|------|---------|--------------|------|--------------------------|
| | χ^2 | p | | | | |
| Chronic disease | 9.304 | .002 | | | | |
| No | | | -0.977 | 0.329 | .003 | 0.38 (0.20–0.72) |
| Yes _(R) | | | | | | |
| Getting tested for COVID-19 | 4.703 | .030 | | | | |
| No | | | -0.624 | 0.293 | .033 | 0.54 (0.30–0.95) |
| Yes _(R) | | | | | | |
| Having surgical patients who cause worry | 6.668 | .165 | | | | |
| Never | | | | | | |
| Rarely | | | -1.397 | 0.623 | .025 | 0.25 (0.07–0.84) |
| Sometimes | | | -0.97 | 0.632 | .878 | 0.91 (0.26–3.13) |
| Often | | | -0.596 | 0.367 | .104 | 0.55 (0.27–1.13) |
| Almost always _(R) | | | -0.019 | 0.310 | .952 | 0.98 (0.53–1.80) |
| Testing surgical patients for COVID-19 | 5.654 | .017 | | | | |
| No | | | 0.622 | 0.263 | .018 | 1.86 (1.11–3.12) |
| Yes _(R) | | | | | | |
| Fear of transmitting the COVID-19 virus to your family members | 21.088 | .001 | | | | |
| Never | | | | | | |
| Rarely | | | -1.713 | 1.392 | .219 | 0.18 (0.01–2.76) |
| Sometimes | | | -2.264 | 0.838 | .007 | 0.10 (0.02–0.54) |
| Often | | | -1.445 | 0.492 | .003 | 0.24 (0.09–0.62) |
| Almost always _(R) | | | -0.900 | 0.350 | .010 | 0.41 (0.20–0.81) |
| Considering the hospital management competent in managing the pandemic | 9.71 | .002 | | | | |
| No | | | 0.838 | 0.271 | .02 | 2.31 (1.36–3.92) |
| Yes _(R) | | | | | | |
| Receiving support from managers | 14.84 | .005 | | | | |
| Never | | | | | | |
| Rarely | | | 2.184 | 0.960 | .023 | 8.88 (1.35–58.26) |
| Sometimes | | | 1.930 | 0.959 | .044 | 6.89 (1.05–45.11) |
| Often | | | 1.447 | 0.955 | .130 | 4.25 (0.65–27.55) |
| Always _(R) | | | 1.013 | 0.957 | .290 | 2.75 (0.42–17.98) |
| Taking enough breaks at work | 4.889 | .027 | | | | |
| No | | | 0.630 | 0.282 | .026 | 1.88 (1.08–3.26) |
| Yes _(R) | | | | | | |
| Being briefed on possible organisational changes | 5.932 | .052 | | | | |
| No | | | | | | |
| Partly | | | 0.798 | 0.332 | .016 | 2.22 (1.16–4.26) |
| Yes _(R) | | | 0.411 | 0.303 | .175 | 1.51 (0.83–2.73) |
| Having difficulty accessing personal protective equipment | | | | | | |
| Never | | | | | | |
| Rarely | 5.142 | .162 | -0.880 | 0.401 | .028 | 0.41 (0.19–0.91) |
| Occasionally | | | -0.534 | 0.443 | .228 | 0.59 (0.25–1.40) |
| Often _(R) | | | -0.470 | 0.428 | .271 | 0.63 (0.27–1.44) |

(Continues)

TABLE 3 (Continued)

| Factors | Model fitting | | | | | OR ^a (95% CI) |
|--|---------------|-------------|---------|----------------------------------|-------------|--------------------------|
| | χ^2 | <i>p</i> | β | SE _{β} | <i>p</i> | |
| Increased workload due to preventive measures at the workplace | 13.186 | .010 | | | | |
| Never | | | | | | |
| Rarely | | | -1.160 | 0.484 | .017 | 0.31 (0.12–0.81) |
| Sometimes | | | -1.622 | 0.547 | .003 | 0.20 (0.07–0.58) |
| Often | | | -0.698 | 0.367 | .057 | 0.50 (0.24–1.02) |
| Always _(R) | | | -0.817 | 0.337 | .015 | 0.44 (4.38–0.85) |

^aIn logistic regression analysis, if “OR” <1 according to the reference category, 1/OR is calculated and specified in the text.

Bold values are indicates *p* < .05.

management origin, they show how important self-care is for nurses as an ethical responsibility (Adams et al., 2020). Research shows that nurses do not pay much attention to self-care and that managers do not address it or try to promote it (Halcomb et al., 2020; Hofmeyer & Taylor, 2021; Hofmeyer et al., 2020). Nurses who have difficulty maintaining self-care are more likely to experience stress, anxiety and burnout (Hossain & Clatty, 2020; Liu et al., 2020a,2020b). Nurses have been assigned to units outside their primary service lines and have had longer shifts since the onset of the pandemic. On the one hand, they have to treat an increasing number of patients with COVID-19, and on the other hand, they have to protect themselves and their families from the virus. This adversely affects their well-being and, therefore, the quality of the care they provide to patients. However, nurses alone cannot always maintain physical and psychological well-being. Therefore, managers should draw up guidelines and put them to use to encourage nurses to pay attention to their self-care and well-being.

Receiving training on COVID-19 preventive measures had no effect on anxiety levels among our participants. However, Dost et al. (2020) report that health care professionals who receive theoretical and hands-on training before encountering infected patients can better protect themselves and manage stress and anxiety.

Single participants reported more anxiety than married ones, albeit insignificantly. This result indicates the contribution of social support to mental health (Su & Guo, 2015). On the contrary, Han et al. (2020) reported more anxiety in married people than in singles.

This study had three limitations. First, the results cannot be generalized because the sample was drawn from one city in Turkey. Second, this was a descriptive cross-sectional study. Longitudinal studies are warranted to determine the long-term effects of the pandemic on nurses. Third, online questionnaires were used to collect data. Therefore, only those who could fill out web-based questionnaires were recruited. Moreover, since the data were collected online, the participants could not ask the questions they might have had in mind.

5 | CONCLUSION

Operating room nurses have been experiencing moderate levels of anxiety since the onset of the pandemic. They can perform

area-specific interventions in addition to their duties and, therefore, are assigned to clinics outside their primary service lines in times of emergency, such as outbreaks. However, they experience high anxiety because they are inexperienced and must work with patients who pose a serious physical or psychological risk. Before being assigned to different clinics (e.g., intensive care units), they should be trained in critical patient care to reduce their anxiety levels. Nurses are one of the frontline occupational groups that play an essential role in fighting COVID-19. Therefore, they should be provided with counselling to meet their psychological needs and help them develop stress management and coping skills. Nurse managers can use the outcome of this study to implement immediate interventions to reduce anxiety among nurses during the pandemic. Authorities should provide nurse managers with guides to help them implement interventions to teach nurses how to manage stress and anxiety in times of crisis.

5.1 | Implications of nursing management

Identifying risk factors will allow us to recognize anxiety in operating room nurses and take measures to help them protect their mental health while working with high-risk patients in different clinics during the pandemic. Managers should draw up emergency action plans and guide and test them regularly to identify areas of strength and areas that need improvement under extraordinary situations, such as a pandemic.

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CONFLICT OF INTEREST

The authors report no actual or potential conflicts of interest.

ETHICAL APPROVAL

The study was approved by Munzur University Non-Interventional Human Studies Ethics Committee of a university (12/06/2020/E-2877).

DATA AVAILABILITY STATEMENT

Author elects to not share data.

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