Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

Moral Distress Among Operating Room Personnel During the COVID-19 Pandemic: A Qualitative Study

Ann-Mari Fagerdahl, RN, PhD,[a,b,*] *Eva Torbjörnsson, RN, PhD,*[a,c] *Martina Gustavsson, RN, MSc,*[d] *and Andreas Älgå, MD, PhD*[a,c,d]

[a] *Department of Clinical Science and Education, Södersjukhuset, Karolinska Institutet, Stockholm, Sweden*
[b] *Wound Centre, Södersjukhuset, Stockholm, Sweden*
[c] *Department of Surgery, Södersjukhuset, Stockholm, Sweden*
[d] *Department of Global Public Health, Karolinska Institutet, Stockholm, Sweden*

ARTICLE INFO

Article history:
Received 21 July 2021
Received in revised form
21 September 2021
Accepted 14 December 2021
Available online 22 December 2021

Keywords:
Surgery
COVID-19
Operating room
Qualitative research
Moral distress

ABSTRACT

Introduction: The ongoing COVID-19 pandemic has necessitated the reallocation of healthcare resources, and a minimization of elective activities. Healthcare personnel involved in COVID-19 care have been negatively affected by the associated excess stress. The existing COVID-19 research has focused on the experiences among healthcare personnel in general, and not particularly on the operating room team members, who have often been relocated to overburdened workplaces. Therefore, we aimed to explore the experiences in this particular group.

Methods: This study has a qualitative inductive design based on interviews with a strategic sample of 12 operating room team members: surgeons, anesthesiologist, specialist nurses, and nurse assistants. The interviews were analyzed using content analysis.

Results: Three themes were identified: "Feeling safe in the familiar and anxiety in the unknown", "To be the ones left behind", and "The possibility for recuperation in a seemingly everlasting situation". The participants described working hard, although their efforts were experienced as not enough according to their moral ideals. We interpreted this as feelings and signs of moral distress, a commonly described concept in previous studies during the COVID-19 pandemic, and a risk for burn out.

Conclusions: The operating room team members emphasized the negative stress of being in the unknown, performing work tasks in an unfamiliar place and situation, and experiencing conflicting feelings of relief and guilt. Organizational strategies toward a functional leadership and support should be emphasized. Such strategies might reduce the risk of psychological consequences such as burn out.

* *Corresponding author*. Department of Clinical Science and Education, Södersjukhuset, Karolinska Institutet Södersjukhuset, Sjukhusbacken 10, S - 118 83 Stockholm, Sweden. Tel.: +46 70 089 10 63.
E-mail address: ann-mari.fagerdahl@ki.se (A.-M. Fagerdahl).

0022-4804/$ – see front matter
https://doi.org/10.1016/j.jss.2021.12.011

Introduction

On March 11, 2020, the Word Health Organization classified the Coronavirus disease 2019 (COVID-19) as a pandemic, that is an infectious disease spread worldwide over multiple continents, affecting a substantial number of individuals.[1] Even during a pandemic, the population will need access to non–pandemic-related hospital care, such as surgery. Globally, the preconditions for such care changed drastically during the first half of 2020. A high disease burden caused by the COVID-19 pandemic has necessitated relocation of healthcare resources and minimization of elective activities.[2] An increasing demand for hospital beds, in particular in the intensive care unit (ICU) has been difficult to address.[3] One way to handle this high demand has been to cancel or postpone elective and subacute surgery and to utilize operating room (OR) wards for intensive care.[4] As a result, the number of performed surgical interventions has decreased drastically.[2,4,5] A diminished workload at the OR enables the personnel to be relocated to overburdened workplaces, such as to the ICU.

Studies have found healthcare personnel in the frontline during the COVID-19 pandemic to be negatively affected by a work situation associated with excess stress.[6,7] For example, in a study by Morgantini *et al.*,[6] over 50% of the healthcare personnel, in 60 different countries, reported burn out. The high demands for health care coupled with limited resources during the pandemic make healthcare personnel prone to morally challenging decision-making, which, in turn, may lead to moral distress. Moral distress is a theoretical concept originally defined by Andrew Jameton, and "arises when one knows the right thing to do, but institutional constrains make it nearly impossible to pursue the right course of action".[8] As the concept has developed, the feeling of not being in control of the situation has been described as central, together with external factors preventing actions considered as "the right thing to do".[9] Gustavsson *et al.* explored the concept within disaster settings and defined *moral stress* as a normal reaction in situations where moral values cannot be acted upon, whereas *moral distress* is developed depending on contextual risk- and support factors.

Working in the OR is complex with specific associated challenges compared with working in other areas. This complexity entails that the personnel needs to be flexible and creative to manage the unpredictable events that may occur – an essential resilience to maintain patient safety.[10] To our knowledge, this resilience among the OR personnel has not been previously studied during the pandemic, even though this group often were relocated to care for COVID-19 patients. The available COVID-19 research has focused on the perceptions and experiences among healthcare personnel in general and not particularly on the OR personnel. Therefore, we aimed to explore the OR team members' experiences during the COVID-19 pandemic.

Methods

Design

This study has a qualitative inductive design.[11,12] This design entails that data are openly analyzed according to similarities and differences to create patterns and are not driven from a hypothesis or a theory.[11]

Study setting and participants

The study was performed at the OR wards of two large emergency hospitals in the Stockholm Region, Sweden. These hospitals have similar organization, similar patient groups, and were equally affected by the pandemic. The included OR team members were surgeons, OR specialist nurses, anesthesiologists, anesthesiology specialist nurses, and nurse assistants. In a normal healthcare situation, these OR team members only work intraoperatively, that is during surgery and not at the pre- or postoperative wards. However, during the COVID-19 pandemic, several of the OR team members were temporarily transferred to work at either the ICU with COVID-19 care, or to the postoperative ward. During the study period, elective surgery was canceled or postponed and only acute and imperative surgery (predominantly cancer surgery) was performed.

A strategic sample technique was used where profession, sex, age, and work experience were taken into consideration.[13] Eligible participants were identified through contact persons at the two hospitals. An email with information regarding the study and a request to participate was sent out to the suggested OR team members. In total, 20 OR team members were asked to participate in the study, 12 accepted: four men and eight women with a median age of 60 y (range 38-70). The participants were general surgeons ($n = 3$), anesthesiologist ($n = 1$), OR specialist nurses ($n = 4$), anesthesiology specialist nurse ($n = 1$), and nurse assistants ($n = 3$). The median work experience was 20 y (range 2-40).

Data collection

Semi-structured interviews were performed during August to December 2020, using an interview guide created by the research group (Appendix 1). The interviews were performed by an OR nurse (A.M.F.), familiar with the context but who had not been working in the OR during the pandemic. The initial question was "Could you please tell me about the first time you heard about COVID-19 and that the disease had been detected among Swedish patients?" The following questions covered areas such as protective gear, information, effects on both work life and personal life, support during the pandemic, and suggestions for future handling of similar situations. One pilot interview was performed to test the interview guide. The research group concluded that the interview guide did not need revision, and the pilot interview was included in the data material. Half of the interviews took place face-to-face at the participants' workplace and half were performed digitally using the video software Zoom (Zoom Video Communications, Inc, San Jose, CA), all according to the preference of the participants. The interviews were digitally recorded and lasted between 23 and 50 min. The interviews were transcribed verbatim for analysis.

Data analysis

The interviews were analyzed using content analysis inspired by Graneheim and Lundman,[12] focusing on the latent content. The entire transcribed interviews were first read to get an overview and a sense of the whole texts where each interview was considered a unit of analysis. As the next step, meaning units that correlated with the aim of the study were extracted. Each meaning unit was labeled with a code and analyzed according to similarities and differences and sorted into subthemes. Based on the subthemes, main themes were identified (Table). The result of the analysis was discussed within the research group until consensus on interpretation was reached. Initially, 10 interviews were performed and analyzed. After performing and analyzing two additional interviews, no additional information was obtained, and the research group judged that saturation of the material was reached.[14] Chosen quotes were translated from Swedish to English. When participants made a pause, this is stated with "…" in the quotations.

Ethical considerations

All participants received written information about the study in an initial email. The participants were informed that they could withdraw from the study at any time. Furthermore, participants were informed that their identity would not be revealed and that no information in the results would be traceable to any individual. Written informed consent was obtained from all participants. Before the interviews, information on the study aim and the interview procedure was provided. The recordings and transcripts were stored at a secure computer server to which only the research team had access. The investigation conforms with the principles outlined in the Declaration of Helsinki.[15] The study was approved by the Swedish Ethical Review Authority (Dnr 2020-01572).

Results

We identified three themes describing the OR team members' work experiences during the COVID-19 pandemic: "Feeling safe in the familiar and anxiety in the unknown", "To be the ones left behind", and "The possibility for recuperation in a seemingly everlasting situation" (Table).

Table – Overview of the results.

Theme	Subtheme
Feeling safe in the familiar and anxiety in the unknown	Relief in working as usual in an extraordinary situation Fear of leaving the familiar for the frightening unknown To relate to the ever-changing truth
To be the ones left behind	Feelings of abandonment and of being left behind The feelings of pulling one's weight
The possibility of recuperation in a seemingly everlasting situation	The seemingly everlasting challenge The need for support and rest to ensure well-being

Feeling safe in the familiar and anxiety in the unknown

This theme involves descriptions regarding the sense of comfort and security of working in the familiar environment of the OR coupled with the fear and anxiety of having to leave this comfort zone. The theme also relates to the aspects of being constantly exposed to new information and facts and having to adapt to this new information and updated guidelines regarding the management of COVID-19.

Relief in working as usual in an extraordinary situation

The participants described the OR ward as their comfort zone. They explained this as a feeling of being safe in their own familiar environment, with their usual daily working routines. Further, the participants described that they were used to quickly adapt to sudden changes in their working conditions.

> In some way, you know, you only do as little as necessary. Because I hadn't been, you know, I wasn't placed in a ward where I did not belong. I could always [perform, authors' comment] my job. I did my regular job, even though I did it more hours per week. And I think that is much easier…, I always know what to do.

The participants did not express any major difficulties working with the protective gear and explained that this level of protection is something they are used to in their daily work. Therefore, this aspect was not considered unusual, even though the pandemic brought extra focus on the utilization of protective gear.

> I do think that for our sake it was, yes it was a change, but at the same time we are extremely used to this, we always work with sterile clothing or with gloves. It is our everyday life and face masks are our everyday life, so that is nothing unusual. For them [other healthcare personnel, authors' comment], it is like everything is new, so of course there is a difference. Naturally, we are better prepared, and we have a completely different knowledge, even though it is introduced more on the general wards, but we are still the best at it.

Fear of leaving the familiar for the frightening unknown

Participants representing all professions of the OR team described thinking initially that COVID-19 was nothing that would affect them personally. It was not until the numbers of admitted infected patients began escalating that the participants started to worry. Furthermore, they described feeling safe with the usage of protective gear; however, this feeling was affected by a need to constantly adapt to the shortage of material. Moreover, a fear of not being updated on the latest guidelines caused a feeling of insecurity regarding how to handle the protective gear correctly.

The participants' major concern was not the risk of getting infected themselves. Instead, their fear related to how the

disease might affect their immediate family members. Some participants described that they were worried about how to cater for their children if they as parents would fall ill. Others expressed concerns for a partner at home, particularly if this person had risk factors, such as age above 65, or comorbidities.

> No, rather for my partner actually. Because he is in the category that he is ten years older than me… well, if you now see it harshly and very narrowly, then he belonged to one of the categories that were at most at risk. Initially at the ICU, if you were there working, you saw who it was lying in the beds… eeh, so I was more afraid that I would bring something home with me.

One of the most stressful situations described by the participants was when they were relocated from the safety in the OR to the ICU, or when they had to perform surgical interventions outside of the OR. This relocation was associated with feelings of stress and anxiety. The participants who had alternated between working in the ICU and in the OR all described a feeling of insecurity when they were not informed until the very morning of the relocation. A consequence of this just-in-time information was an inability to mentally prepare for the workday, resulting in increased anxiety.

> It was horrible. I was anxious to go to work because I only wanted to work at, I wanted to work at the OR, which I am good at… eeh, and yes, no I was anxious to go to work almost every day… It has been absolutely no problem to work at the OR during this time. But I have been anxious about working in the COVID ICU and not because I have anxiety about taking care of patients. It was because it is not the type of care that I master.

During this period, surgical interventions outside of the OR commonly involved the OR team, such as for patients scheduled for tracheotomy at the ICU. The participants described that these situations are associated with increased workload and feelings of anxiety and stress, even during normal circumstances. The ongoing pandemic exacerbated these feelings. Several participants described the psychological impact of witnessing many severely ill and dying patients at the same time. This image was expressed as something unusual compared to the OR environment, where they were used to focusing on one patient at a time. Furthermore, the participants reported that they were not at all prepared for this new reality and described how the consequences of this virus really hit them.

> Although I cannot say, once you were down there [at the ICU, authors' comment], that it was scary in that moment. It's probably just a before going there you think it's scary, you do not know what scenario to imagine. Then it was a little scary to go down when you saw how incredibly sick the people were… So, it's clear, you get affected when you see it, yet it was not very old people, it was not always huge and fat people at risk, but it were just like us normal people lying there… and fighting for their lives…

Participants described that they felt unsafe and insecure when leaving the OR ward to work with COVID-19 patients in the ICU. The interaction with unfamiliar healthcare personnel and being in a new situation and a new environment led to stress. This stress contributed to an uncertainty in the management of practical issues, for example the use of protective gear and other procedures that normally had not caused problems when the participants worked in their familiar workplace.

> We left the OR ward and then you become much more insecure. In the OR I know where there is a trash can where I have to throw my stuff, but then I come to the ICU and then I think, where is the trash? Where is the hand disinfectant? And so…

To relate to the ever-changing truth

At the OR, the participants were presented with and had to relate to new information, new facts and guidelines regarding the management of COVID-19. Guidelines were often updated, sometimes daily.

> We got a lot of information in the beginning. We received information every morning with changed guidelines. Eeh… so that… we got information about how we should dress… and about cleaning and which room… which operating room we should use and for how long it should be empty afterwards. Well… that was it. And it changed a bit from day to day. It all happened very fast there in the beginning. There were a lot of routines that I experienced changed from day to day. So, it was pretty hard to stay up to date with the latest.

This rapid change in information was particularly stressful when dealing with information regarding the use of protective gear. The instructions often changed from day to day, at times leaving the staff confused and stressed. These changes contributed to feelings of doubt and mistrust toward the management. Some of the participants suspected that the changed guidelines were due to the limited supply of protective equipment, particularly in the very beginning of the pandemic. Others related the turnover of information to an increased global knowledge of the virus and how to protect yourself accordingly. Despite the interpreted motive behind the frequently updated instructions none of the participants expressed any suspicions that the management had intentionally put them in jeopardy. Furthermore, the participants believed that the management had tried their best with the means available, both in terms of knowledge and equipment.

> I think they had our best in mind, but I think they had to act based on what they had, what they received… They had no choice either… If there is no material available there is no material… What in the world are they going to do…

The participants described how they corrected each other when they perceived that something deviated from the current guidelines. At times, such corrections created tension

between co-workers, particularly when an OR team member wanted to use more extensive protective gear than was stipulated in the guidelines. Such situations led to misunderstandings and feelings of frustration. The participants described how feelings of unsafety during surgery generated an extra stress load, which in turn led to a fear of jeopardizing the patient safety.

> I asked at a staff meeting if you were allowed to take a N95 respirator [a specific face mask with filtration of airborne particles, authors' comment], and you couldn't if the patient was negative. But I think that when you are there on call, you can take what you feel you want. I will not, I will not be a policeman if someone said "I still want a N95 respirator".

To be the ones left behind

This theme consists of experiences related to remaining at the OR ward to perform the usual everyday work while attention and focus from the management, colleagues, and the public were on the ICU and on the OR personnel being relocated. Furthermore, the theme contains feelings regarding the importance and value of maintaining the work needed at the OR ward during the pandemic.

Feelings of abandonment and of being left behind

Both the participants who were relocated to the ICU and some of those remaining at the OR ward described feelings of being abandoned. During this early period of the pandemic, the relocated personnel were organized under the management of the new ward, and some of them expressed the need for being better linked to their regular management for support.

> But the only thing, I haven't encountered it myself, but I have heard of it, is that they would have appreciated more if the manager had visited the ICU on a regular basis and supported the poor OR staff that were thrown into "Mordor".

The participants who were relocated to the ICU experienced considerable challenges regarding professional competencies and the demands on their work role. They experienced a general view that they would be able to, without any further introduction or training, get directly into the ICU work. This generated considerable stress among those who were transferred to work in the ICU. Furthermore, feelings of being insufficient generated performance anxiety which led to increased psychological stress and, sometimes, conflicts between the different healthcare professions. At times, the OR team members experienced a lack of understanding from the management that had repositioned them to a new workplace with limited information and education regarding the environment, tasks, and patient care.

> …which turned out to be a big mistake when it comes to the the staff, because we are not… there are different specialties of care, different, we certainly know respirators and ventilation but it is so much, much more with an ICU patient that we absolutely don't know… and what happens in an ICU is not at all the same as what happens in the OR… A colleague told me that she came down there and very frustrated and "God, what is going to happen now", and… yes, we'll turn off the respirator. "What!" It is so unaccustomed to us, and many of our colleagues are pretty young and it is not easy just watching people die around you. You're not used to that and that's what is happening now.

Many of the participants described conflicting feelings of being left behind at the OR ward. Some felt a sense of relief not having to be exposed to the distress of working outside the familiar OR environment. However, others expressed feelings of guilt and feelings of letting their co-workers down. As a result, some OR team members tried to compensate by working even harder.

> But I had a very bad conscience that I did not do it, but at the same time I was grateful that I didn't have to… I am still struggling a little with that, a little bad conscience that I was not down there and helped out. I am still, I am still thinking about that…

The feeling of pulling one's weight

Throughout the pandemic, all participants described their workload as being markedly increased. The participants described situations, especially at the beginning of the pandemic, in which they performed their work without hesitation, even though they worried about the risks related to the virus and the correct handling of the protective gear. Some of them expressed these actions in terms of collegiality and work ethics, but also in terms of empathy for the patients in their vulnerable situation.

The participants described a strong sense of collegiality where they stood up for each other and collaborated to get the work done. This collegiality was especially strong when the OR team performed their work despite being worried about it and when relieving co-workers who had a risk factor causing an increased vulnerability to the virus.

Some of the participants felt that their work was overshadowed by the work their co-workers did at the ICU and wanted to emphasize that they too pulled their weight during the pandemic.

> The sad thing, I think, is that, all the anesthetics personnel were completely exhausted. And what we got was that we "had only been here [at the OR, authors' comment], so we were protected" and I think that is a bit wrong because we were not protected, even if we were to some extent, but still I would not say that we were. Many of us were on pre-operative wards and in other COVID wards and on the ICU, so we were still assigned elsewhere. Even though we were somewhat spared. That it, that they thought there was an injustice in that we were not so affected. We have worked hard in a different way. That is important to mention.

The possibility of recuperation in a seemingly everlasting situation

This theme deals with the physical and psychological strains the pandemic had on both the workload and on the participants' well-being, coupled with the importance of recuperation as a key element for handling the crisis. In addition, the theme contains the participants' concerns for the future, including recurrent waves of the pandemic.

The seemingly everlasting challenge

The participants expressed that they could never have anticipated to which extent the pandemic would affect both their own lives and their work situation. The participants described how they just did what had to be done at the beginning of the pandemic, and how, the longer and more severely the pandemic progressed, they gradually developed feelings of resignation and of being in an everlasting challenge.

> Somewhere it was like this, it is only these ten weeks, then we get back to our usual schedule. And, yes, it was like that, I endured these weeks, then it will probably resolve. That was the attitude we had. It was calmer after the summer began. So, it felt like, I'm doing this this short period, but, but, I would not have endured, if I had known it would continue.

The fear of the pandemic striking hard again and that the participants would find themselves back in the same situation was constantly present and stressful. Furthermore, some of the participants said that the experiences and knowledge from the first wave of the pandemic had created some comfort and confidence in handling upcoming situations. They described feeling strengthened by their achievements and pointed out the power of team collaboration in dealing with difficult situations.

However, some of the participants expressed that their experiences had made them even more anxious since the experiences had made them aware of what was coming.

> No, I am very afraid that it will be as it was last spring… Once you are in the middle of it you do the best you can, that's how I feel, you do your best. But, now… I just get anxious knowing that I would end up there again. I must admit that I think it feels like the experience I had this spring feels… no, I think it's worse to know what's expected of me.

The need for support and rest to ensure well-being

The need for formal emotional support during this crisis was emphasized by the participants. Several of them had received information about the possibility of professional support by the occupational healthcare unit, as a general offer at the workplace. However, some described that their co-workers were the main source of support and debriefing during this period.

> We are a close group and so, with each other, that we can talk to each other and it is a huge and important thing that you can talk to each other, you dare to talk to each other. So, I think we helped each other very well, when we needed to talk. That, I am proud of that in our working group, it has always been like that, I think. I cannot ever remember a time when we did not support each other as well, when it is hard.

Despite the valuable support of co-workers, the need of professional debriefing was mentioned by some of the participants. Participants stressed that the support should be offered during a longer time period, and not only as a one-time occasion.

The participants described how their work during the pandemic had affected their private lives and their close relations. Many of the OR team members had to alter their work schedule during this time, adding extra working hours. The planned summer vacation was cancelled for many of the participants, leaving no period of continuous free time to look forward to. This also contributed to the stress and an intensified feeling of need for recuperation.

> You were just home and sleeping and back to work then… There was like no life… private. It was just like surviving.

Discussion

When exploring the experiences of OR team members who worked during the COVID-19 pandemic, the main findings included feelings of anxiety and stress related to the ever-changing working situation, the fear of a practically unknown virus, and the constantly updated guidelines and information on protective equipment. These findings are in line with previous research on the experiences of non-OR healthcare personnel involved in the COVID-19 care.[16] Working in protective gear has been described as challenging to other frontline healthcare personnel and as a contributor to increased work-related stress during the pandemic.[17] Interestingly, the experiences of OR team members in the present study did, however, differ somewhat. For instance, OR personnel are used to working in protective gear on a daily basis, and they have special training in aseptic techniques and hygiene. These specific competencies in the OR team were mentioned by all the participants in our study and may have served as "protectors", contributing to feelings of being safe and secure while remaining at the OR ward, performing the everyday work tasks.

Participants described working hard, although their efforts were experienced as not enough according to their moral ideals. We interpreted this as feelings of moral stress derived from ethical challenges. However, for some participants it might be feelings of moral distress depending on available protective factors. Some participants also described conflicting feelings; on the one hand relief of not having to be transferred to the COVID-19 care at the ICU, but on the other hand a sense of guilt of not working alongside their co-workers at the front line managing COVID-19 patients. Gustavsson *et al.*[18] highlight risk factors for moral distress among disaster responders, such as organizational factors with insufficient

support and understanding by managers, a high workload and work exhaustion, and insufficient knowledge and possibility to prepare. All these factors are reported by the participants in our study and may contribute to moral distress and anxiety. The participants describe leaving the familiar OR ward as particularly stressful. This is in line with findings from a Norwegian survey of 1606 hospital-based nurses and physicians demonstrating increased levels of moral distress among personnel with altered work responsibilities due to the COVID-19 pandemic.[19] The findings of our study emphasize the need of proper introduction to a new work environment and tasks even when there is an acute situation, such as a pandemic. In general, aspects of workplace changes might be described as either positive, for example increased learning opportunities, or negative, particularly due to emotional exhaustion when feeling insecure.[20] This complex situation emphasizes the need for support from managers, especially when personnel are being relocated to unfamiliar contexts. Managers should provide an introduction and clearly communicate the new work conditions and tasks to allow for some degree of involvement in the decision-making.[20] Some of our participants felt forced to work outside the OR, and the insufficient adherence and support contributed to the negative experience of their relocation. Also, being in a situation without an overview or possibility to plan was expressed as stressful. Shorter work shifts and regular follow-up by the managers, together with a clear description of the work plan and work schedule for each employee might lead to an increased feeling of being involved and a stronger sense of having control over the situation. All these factors may play a role in the risk of moral distress.[18] However, the participants did mention some positive outcomes, which could serve as protective factors against moral distress such as professional development with increased knowledge, functional team collaborations, and the experience of being able to manage despite extreme conditions.[18]

The participants in this study described feelings of insufficient interprofessional knowledge and competence. In extreme situations, such as a pandemic, these insufficiencies risk hindering vital interprofessional collaboration. To facilitate collaboration, clear guidelines and structures need to be in place. Furthermore, an increased interprofessional collaboration during noncrises will result in increased knowledge and respect for other professional competencies. Interprofessional education refers to when two or more different professions learn *with*, *from*, and *about* each other.[21] In the present study, we found a lack of interprofessional competence regarding *about* each other. The participants who were transferred from the OR ward to the ICU felt insecure due to the new environment. These feelings were exacerbated when the staff in the ICU expected knowledge regarding skills that they were not educated for or had experience of. MacDonald *et al.*[22] stress the importance of the competency knowledge of the professional role of others, both in order to create effective team collaborations for patient safety and to avoid misconceptions regarding each other's work role within the team. The authors recommend interprofessional education focusing on this area early in the educational program for all healthcare professions.

The participants' main support mechanism was the informal support provided by co-workers, which could be explained by the fact that more formal support mechanisms were inadequate or unavailable. When faced with extraordinary situations such as a pandemic, it is essential to early establish a plan for professional and organizational support. Such actions may strengthen both the internal and the external resources for the individual healthcare personnel and reduce moral distress to avoid burn out.[18] The healthcare system was strained in many countries even before the onset of the COVID-19 pandemic, with patients awaiting surgical procedures and a global nursing shortage.[23] This pre-existing strain should be considered when summarizing the challenges ahead for healthcare providers once the COVID-19 pandemic subsides. The growing need of surgical care will be left for the OR personnel to handle and will require availability of a full work force. An alarmingly high level of healthcare personnel are suffering from burn out due to the pandemic,[6] and there is a need of organizational support strategies both during and after disasters such as the COVID-19 pandemic to ensure the well-being of healthcare personnel.[24]

In addition to the negative aspects, the participants of our study also described that they contributed, collaborated, and learned a lot by their experiences during the pandemic. All negative and positive aspects should be taken into consideration in future situations, aiming at strengthening healthcare workers' moral, and developing organizational efforts to support working conditions.

Limitations

Some limitations should be considered. This study was performed during a time of varying workload related to the COVID-19 pandemic which may have influenced the different participants' experiences depending on workplace and where in the pandemic phase they were at the time of the interview. However, we explicitly asked the participants to focus on the time period of spring 2020, that is the early pandemic phase. Although data collection was initiated in August, some of the interviews were performed in December 2020, risking introducing recall bias.[25] However, considering the severe and extraordinary circumstances of the ongoing pandemic we judge this risk to be small.

Half of the interviews were performed digitally using a video conferencing system, something that might be considered a limitation. However, online conferencing systems have been increasingly common during the pandemic and the participants who chose this medium for their interviews felt conformable with the technique, as did the researchers. In addition, we did not experience any differences in the quality of the data we received from the various ways of interacting with the participants.

The small sample size could be considered to limit generalizability. However, in qualitative research the goal is not to generalize the findings to a larger population, but rather to explain and understand the phenomenon of interest. Instead of generalizability, the concept transferability is used. This concept can be explained as to what extent the findings can be

transferred to other settings and groups, which is always up to the reader to interpret. To facilitate this interpretation, we have aimed to give a clear description of the context and participants together with appropriate quotations according to the recommendations of Graneheim and Lundman.[12]

Conclusions

The interviewed OR team members working during the COVID-19 pandemic emphasized the stress of being in the unknown, performing work tasks in an unfamiliar place and situation as well as having conflicting feelings of relief and guilt. Organizational strategies toward a functional leadership and support should be emphasized, which could relieve feelings during a crisis that may contribute to moral distress. Such strategies might reduce the risk of psychological consequences such as burn out. Hopefully, our results will prove to be transferrable to other settings and situations during the current pandemic and to future challenging events.

Author Contributions

Ann-Mari Fagerdahl: Conceptualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. Eva Torbjörnsson: Conceptualization, Methodology, Writing – review & editing. Martina Gustavsson: Conceptualization, Methodology, Writing – review & editing. Andreas Älgå: Conceptualization, Methodology, Writing – review & editing, Supervision.

Disclosure

None declared.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of Interest

The authors have no conflicts of interest to declare.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jss.2021.12.011.

REFERENCES

1. WHO. *WHO Announces COVID-19 Outbreak A Pandemic*; 2020. https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic.
2. Al-Jabir A, Kerwan A, Nicola M, et al. Impact of the coronavirus (COVID-19) pandemic on surgical practice - part 2 (surgical prioritisation). *Int J Surg*. 2020;79:233–248.
3. Madanipour S, Iranpour F, Goetz T, Khan S. COVID-19: lessons learnt and priorities in trauma and orthopaedic surgery. *Ann R Coll Surg Engl*. 2021;103:390–394.
4. Ludvigsson JF. The first eight months of Sweden's COVID-19 strategy and the key actions and actors that were involved. *Acta Paediatr*. 2020;109:2459–2471.
5. Stöß C, Steffani M, Kohlhaw K, et al. The COVID-19 pandemic: impact on surgical departments of non-university hospitals. *BMC Surg*. 2020;20:313.
6. Morgantini LA, Naha U, Wang H, et al. Factors contributing to healthcare professional burnout during the COVID-19 pandemic: a rapid turnaround global survey. *PLoS One*. 2020;15:e0238217.
7. Sharifi M, Asadi-Pooya AA, Mousavi-Roknabadi RS. Burnout among healthcare providers of COVID-19; a systematic review of epidemiology and recommendations. *Arch Acad Emerg Med*. 2021;9:e7.
8. Jameton A. Dilemmas of moral distress: moral responsibility and nursing practice. *AWHONNS Clin Issues Perinat Womens Health Nurs*. 1993;4:542–551.
9. Lützén K, Cronqvist A, Magnusson A, Andersson L. Moral stress: synthesis of a concept. *Nurs Ethics*. 2003;10:312–322.
10. Göras C, Nilsson U, Ekstedt M, Unbeck M, Ehrenberg A. Managing complexity in the operating room: a group interview study. *BMC Health Serv Res*. 2020;20:440.
11. Graneheim UH, Lindgren BM, Lundman B. Methodological challenges in qualitative content analysis: a discussion paper. *Nurse Educ Today*. 2017;56:29–34.
12. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004;24:105–112.
13. Patton MQ. *Qualitative Research & Evaluation Methods*. London: SAGE; 2002.
14. Mason M. Sample size and saturation in PhD studies using qualitative interviews. *Forum Qual Soc Res*. 2010;11.
15. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA*. 2013;310:2191–2194.
16. Heath C, Sommerfield A, von Ungern-Sternberg BS. Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: a narrative review. *Anaesthesia*. 2020;75:1364–1371.
17. Chen F, Zang Y, Liu Y, Wang X, Lin X. Dispatched nurses' experience of wearing full gear personal protective equipment to care for COVID-19 patients in China-A descriptive qualitative study. *J Clin Nurs*. 2021;30:2001–2014.
18. Gustavsson ME, Arnberg FK, Juth N, von Schreeb J. Moral distress among disaster responders: what is it? *Prehosp Disaster Med*. 2020;35:212–219.
19. Miljeteig I, Forthun I, Hufthammer KO, et al. Priority-setting dilemmas, moral distress and support experienced by nurses and physicians in the early phase of the COVID-19 pandemic in Norway. *Nurs Ethics*. 2021;28:66–81.
20. Nikolova I, van Dam K, Van Ruysseveldt J, De Witte H. Feeling weary? Feeling insecure? Are all workplace changes bad news? *Int J Environ Res Public Health*. 2019;16:1842.

21. Guraya SY, Barr H. The effectiveness of interprofessional education in healthcare: a systematic review and meta-analysis. *Kaohsiung J Med Sci*. 2018;34:160–165.
22. Macdonald MB, Bally JM, Ferguson LM, et al. Knowledge of the professional role of others: a key interprofessional competency. *Nurse Educ Pract*. 2010;10:238–242.
23. Haryanto M. Nursing shortage: myth or fact? *Orthop Nurs*. 2019;38:1–2.
24. Fernandez R, Lord H, Halcomb E, et al. Implications for COVID-19: a systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. *Int J Nurs Stud*. 2020;111:103637.
25. Althubaiti A. Information bias in health research: definition, pitfalls, and adjustment methods. *J Multidiscip Healthc*. 2016;9:211–217.