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The COVID-19 pandemic: an opportunity-centric approach from an ICU perspective

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The COVID-19 pandemic: an opportunity-centric approach from an ICU perspective

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Abstract

Objectives

During the COVID-19 pandemic, the intensive care unit (ICU) staff was materially, physically, and emotionally challenged. This study investigated the effects that ICU staff experienced that were considered of value to be permanently implemented.

Methods

In our academic centre, we conducted semi-structured interviews with ICU staff to evaluate their experiences during the first wave of the COVID-19 pandemic. An opportunity-centric approach was applied to optimise the achieved results and guided by the theoretical model of appreciative inquiry (AI).

Results

Fifteen staff members (8 nurses and 7 intensivists) participated. Working during the COVID-19 pandemic catalysed interprofessional collaboration and learning in the ICU on an individual and team level, centred around a common goal: taking care of critically ill COVID-19 patients. The effect of interprofessional collaboration was that provisions were taken care of quicker than usual, without bureaucratic delays. However, this effect was experienced to be transient. Also, ICU staff perceived limited possibilities to help patients and families around the palliative phase, and they perceived a lack of appreciation from higher management. This is a point of future attention: how to make the latter efforts more visible to all (ICU) staff.

Discussion

We included a mixed group of ICU staff. The lack of results from the later COVID-19 pandemic waves might be a limitation of this study. However, this first evaluation already gave valuable insights into the experiences of ICU staff during this first peak. Further research concerning team reflexivity might enhance our knowledge about working together during and after a pandemic.

- **What is already known on this topic** – The mental and physical effects of the COVID-19 pandemic on health care workers, family members, and patients, as well as the lessons learned regarding the treatment of COVID-19 patients, have extensively been studied. It remains unclear which organisational changes benefited work pressure and workload for ICU staff during the first COVID-19 peak.
- **What this study adds** – Working in the ICU during the COVID-19 pandemic catalysed interprofessional collaboration and learning on an individual and team level, centred around a common goal: taking care of critically ill COVID-19 patients. The consequence of this interprofessional collaboration was that all kinds of provisions were taken care of quicker than usual, without delays caused by bureaucracy.
- **How this study might affect research, practice, or policy** – The results of this study show that nurses had the perception that they could not deliver the quality of care that they usually do. A potential solution could be to debrief their concerns at the end of their shifts. This would be useful to investigate in the future. Also, research concerning team reflexivity might enhance our knowledge of working together during and after a pandemic.

Objectives

The COVID-19 pandemic has an ongoing worldwide impact on healthcare. In February 2020, the first patient was admitted to the intensive care unit (ICU) in the Netherlands, whereas a month later, this number had increased to over 1,100 patients nationwide.[7] As the pandemic spread, personnel in the ICU were materially and physically, and emotionally challenged. Several studies underlined the high risk of viral contamination necessitating the wearing of personal protective equipment (PPE), which further intensified the work.[8, 9] In addition, ICU personnel worked long days under high work pressure while having concerns about their health and their families and colleagues.[5, 10-12] Because of the shortage of ICU staff in relation to the working conditions and workload, elective medical and surgical procedures were suspended, critical care trained staff working in other departments or retired personnel were reclaimed, and trainees, as well as temporary healthcare workers, were redeployed.[4] Participation in other than standard team compositions and interactions, collaboration, and communication between colleagues who were not usually working together was a real challenge.[3, 13, 14] Communication with and between patients and their families likewise changed. Bedside visits by family members were no longer feasible; video conferencing enabled family members to communicate with their relatives and (para)medical staff. The operational structure of the ICU unit was thus reshaped, and processes were rapidly adapted to overcome these, as was shown by several studies.[15-18] Whereas the mental and physical effects of the pandemic on health care workers, family members, and patients and lessons learned have extensively been studied[1-6], it remains unclear which organisational changes benefited work pressure and workload for ICU professionals during (one of) the COVID-19 peaks, and which changes were experienced so valuable that they are worthwhile to maintain implemented permanently, on ICU level or hospital level.

Therefore, we aimed to evaluate which temporary changes in the ICU's organisational structure and processes during the COVID-19 pandemic were considered worthwhile to preserve from workload reduction as perceived by the ICU staff. Therefore, we executed a qualitative study using individual semi-structured interviews among ICU staff active during the first peak in the COVID-19 pandemic applying an opportunity-centric approach.

Methods

Design

We conducted semi-structured, face-to-face, in-depth interviews with ICU staff to evaluate their experiences during the first peak of the COVID-19 pandemic (between February and July 2020) in the ICU in xxxxxxxx The study period was between September and December 2020, just after the first peak.

Patients and public involvement

Patients and public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

Method

We chose individual interviews since we were interested in the individual opinions of the ICU staff and wanted to prevent possible peer pressure and hierarchical influences. Moreover, it was challenging to gather a larger group of staff due to busy schedules.

Opportunity centric approach and theoretical model

An opportunity-centric approach was applied, which aims to optimise the achieved results. The theoretical model of appreciative inquiry (AI) was used to guide the opportunity-centric approach. AI has been developed to explore and discover possibilities and positively transform systems and teams in organisations toward a shared vision.[19] In its broadest focus, AI involves systematically discovering everything that supports a system when it is most active.[20-22] AI focuses upon a mindset of abundance (what does work) versus scarcity or the problem (what does not work).[23] AI is, therefore, valid during a pandemic since it might just then reach its highest potential for impact in organisations and human systems. Resilience, even during a pandemic, can therefore grow.[24]

Interview guide

The questions in the semi-structured interview guide were based on the theoretical background (AI); by positively framing these, they were compiled by WS and DK.

The main questions we touched upon during the interview were:

- What have you appreciated while working in the ICU during the COVID-19 pandemic?
- Which of these items would you like to be maintained in general?
What has given you resilience?

Interviews

The interviews were conducted by an experienced researcher (WS) who took field notes during the interviews. The semi-structured interview questions were adapted and probed into rationales behind the answers applied where necessary during the interviews. The interviews were recorded and were held in the ICU or, with a few exceptions, digitally via MS Teams.

Context and setting

The study was performed in the xxxxxx, a university medical centre with 715 beds and a level 3 ICU (60 beds) providing a regional coordinating function for ICU patients in the xxxxxxxxxxxxxx.

Participants & sampling

All ICU staff employed during this first peak of the COVID-19 pandemic in the xxxxxxxxxxxx between February and July 2020 were eligible for inclusion. Inclusion was performed using convenience sampling combined with purposive sampling to achieve diversity regarding the staff's position (nurse and physicians, respectively), age, gender, experience, expertise, and (if applicable) speciality. Inclusion was continued till data saturation was reached.

Invitations to participate were sent by e-mail. Using convenience sampling, we approached 14 ICU staff members for participation in our study. After the first invitation, 3 staff members agreed to participate in the study. The others were sent a reminder but without any success. After that, another group of 15 staff members were invited to participate. This resulted in another 6 candidates. As the inclusion faltered, we decided to adjust our sampling to purposive sampling. Finally, we

approached 6 potential participants personally. They were all willing to participate. In total, we invited 35 candidates.

Data collection & data analysis

We collected demographic data such as age, gender, and work experience. The recorded interviews were transcribed verbatim and anonymised by trained (medical) students who signed a confidentiality agreement. The participants checked the transcripts for correctness and completeness (member checking). Afterwards, the anonymised interviews were read and independently coded by three researchers (WS/BM/DK). Differences in coding were resolved by consensus. Furthermore, the COREQ checklist for qualitative studies was used.[25] The data were analysed using standard principles of thematic analysis.[26] For the analysis, text fragments were highlighted for correspondence to the categories. Throughout all interviews, we identified key themes by grouping the codes into larger themes. The findings within the categories were discussed among the three researchers until a consensus was reached.

Results

15 staff members (8 nurses, 7 intensivists) participated. Their age ranged from 23 to 63 years (intensivists: 37-52 yrs and nurses: 23-63 yrs). Their experience ranged between 1-18 years for intensivists (median 8 yrs) and 1-40 years for nurses (median 12yrs). The duration of the interviews was between 20 and 40 minutes (mean 25 minutes).

After the categorisation, the following main themes were derived:

1. Burden and benefits of working during COVID-19
2. Prevention of spreading infections versus patient and family support
3. Collaboration
4. Management
5. Quality of care
6. Support

These themes will consecutively be discussed with illustrative quotes from the interviews with N(urses) and C(linicians), see table 1.

Table 1: Quotes of the interviewees

Theme	Quote
Burden and benefits of working during COVID-19	<p><i>"The services were actually very clearly divided. There were a lot of shifts, but because there were actually many of us, it made the work doable" C1</i></p> <p><i>'Sometimes it was difficult that you had to work completely isolated and it is just very tiring with mouth masks on and constantly getting changed and being cautious that you don't infect yourself or your colleagues.'"N2</i></p> <p><i>"There was still laughter, people worked hard, but, you just get appreciation from each other, also from outside, every night there was a box of, with some goodies from some restaurant ready. So you already know what you're doing that that's important and, this gives satisfaction in what you're already doing,</i></p>

	<p><i>even in such a crisis situation." C1</i></p> <p><i>"Yes I found that feeling of, um, putting shoulders together, I found that really very pleasant and I think that's also really something we need to maintain." N2</i></p>
<p>Patient and family restrictions to prevent spreading of COVID-19 increasing the emotional burden for ICU staff</p>	<p><i>"We get a lot of information from the family, especially for intubated patients. But they weren't in the picture now, so it really became, a kind of numbers work, rather than personal." N3</i></p> <p><i>"It was terrible in the first period that patients died without family members being able to say goodbye. That breaks your heart, that's not how you want to leave the world yourself." N5</i></p>
<p>Collaboration</p>	<p><i>"I think in some ways, or yes actually in all ways that the greater good was more important than personal opinions. This is bigger than ourselves and all the disagreements that there are or struggles from the past, that's not important now." N2</i></p> <p><i>"Normally you are familiar in your own team and you know how everyone functions and now you were working in other collaborations and people you didn't know beforehand or maybe had seen once." N1</i></p> <p><i>"I have to say that one time it was busy, and you saw a lot of, colleagues from outside, came to help, both nurses and doctors. There was an enormous positive vibe and, I always get excited when other people get excited too. So, it was very much that feeling of, together we'll go for it." C1</i></p>
<p>Management support and appreciation</p>	<p><i>'The fact that the next steps were always clear of okay if we only have so many beds free now then we will go to the next stage and then we have to do this and this and this, and that gave uh at least for me as a staff member that gave a lot of peace.' C5</i></p> <p><i>"The organisation could have shown more commitment. No idea what they were doing during that COVID period. We did get a daily update from the IC, but we didn't really get updates on the organisation that they were involved with, whether they were doing anything for us" N4</i></p>
<p>Quality of care</p>	<p><i>"In that period things have not been handled according to our protocol, of course you can't accept that in normal time." N5</i></p> <p><i>"The extent of teaching, what worries me is that I also notice to myself and to my fellow intensivists and I also notice to the fellows that the stretch is also just gone you can't keep burdening people in this way and you know at the end of the line they have to be intensivists." C7</i></p>
<p>Personal and professional support</p>	<p><i>"If I look at it very selfishly, it was a top time. It meant that I worked six days and then if I had time off, it was during the week. The weather was pretty nice. So, I've never been on the bike as much as I have been this year." C2</i></p> <p><i>"There was a lot in the news about the ICU. I don't have to explain now what an intensivist is. Everybody knows that now. Not only within the hospital but also outside the hospital." C7</i></p>

N= Nurse C= Clinician

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1. Burden and benefits of working during COVID-19

The intensivists did not experience longer work shifts but had to work more frequently and busier shifts since more hands were needed during the shifts to be able to care for the number of patients consulted for. They classified COVID-19 as a very interesting disease they had never experienced, and thus working was seen as a challenge rather than a burden.

ICU staff had more patients under their care than usual, and they had more responsibilities. This resulted in a much higher work pressure where decisions had to be made quickly. However, at the same time, the feeling of “us against the virus” was felt as very positive. Finally, ICU staff agreed that this cohesion would be important to keep in the future.

ICU staff anticipated as much as possible in various ways (mentally and organisation wise) for the arrival of COVID-19 patients. However, at the same time, the impact of these patients on their work burden and treatment options was, of course, largely unknown. They indicated that they had to work hard (long shifts with large numbers of patients under their supervision) to manage this increasing patient group. The treatment of these patients was experienced to be intensive, and the physical characteristics of the patients (such as their weight) who were admitted made care extra difficult.

In addition to the increases in the number of shifts and patients admitted, shifts were found to be extra exhausting because of the necessity to frequently change PPE when moving from a ward with COVID-19 patients to a ward with non-COVID-19 patients.

At the beginning of the pandemic, the moral and physical support and appreciation from people outside the medical centre were heartwarming. For instance, there was a huge banner put up on the side of the parking lot of the medical centre with supporting words from football supporters, and ICU staff frequently received food and flowers from local restaurants and shops. But unfortunately, this support diminished as the national restrictions (lockdown) continued.

2. Patient and family restrictions to prevent the spreading of COVID-19 increase the emotional burden for ICU staff

During the beginning of the pandemic, the medical centres' higher management (comparable to other Dutch hospitals) ruled that visitors were not allowed in departments with COVID-19 patients, even when patients were terminally ill. ICU staff generally agreed they felt morally distressed not allowing families to visit. Usually, families are the prime information source for the admitted and intubated patients, and now the ICU staff felt that they did not know anything about admitted patients, except their names and underlying illness, COVID-19 and its sequelae. Furthermore, ICU staff felt that all patients were very similar and more or less lost their identity because of the large communalities in their clinical course. However, later during the first peak, the family could see and talk to their loved ones via Zoom on tablets, making it possible to gather more personal details about the admitted patient.

Nevertheless, physical contact was essentially impossible. Especially when patients were in the palliative phase without being surrounded by their family and friends, the impact on ICU staff was enormous. They often felt despaired, unable to allow a proper, dignified and respectful farewell to

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3 loved ones. Ultimately, all ICU staff concluded that they never wanted to deal with not allowing visits
4 to patients or patients to die all alone again, regardless of the circumstances.
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6 3. Collaboration

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8 At the time of the first peak, intensivists, nurses, paramedics, students, and recently retired staff
9 from outside of the ICU who volunteered were scheduled to work in the ICU, with or without a
10 preparatory course, to help. This help was highly appreciated and experienced as a burden, especially
11 by the nurses. Also, they felt a high degree of responsibility: they had to take care of more patients
12 despite extra staff from outside of the ICU who were not qualified for all actions that the ICU staff
13 usually executes. As a result, the trained ICU nurses felt that they had to direct others on top of
14 providing care for their patients.
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18 ICU staff noticed that the interdisciplinary and interprofessional collaboration between and with
19 other departments significantly improved during the first wave. One common goal was identified:
20 treating COVID-19 patients. Official rules and viscous agreements were subsequently pushed aside by
21 employees from other departments to support each other as quickly and as well as possible. After
22 this initial promising spin-off of working together on one common goal, ICU staff noticed that as the
23 pandemic continued and to the outside world appeared to decline, the other non ICU departments
24 likewise returned to 'business as usual'. They reported that slowly but surely, the benevolence of
25 other departments diminished, and bureaucracy returned.
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30 The opening of new temporary "ICUs" and the involvement of colleagues from other departments
31 resulted in new interprofessional team compositions, which were also sometimes hard for ICU staff
32 to get used to. Especially the nurses occasionally experienced difficulties adapting to those new
33 working conditions. Nevertheless, most intensivists agreed that the atmosphere was commonly
34 positive and inspiring.
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37 4. Management support and appreciation

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39 To a greater or lesser extent, ICU staff felt supported by their management team. Most of them felt
40 taken seriously and involved when the plans for upscaling were created. Intensivists indicated that,
41 due to efficient leadership, the next step upscaling plans were ready to be executed whenever reality
42 got worse. Decisions were executed quickly: it was evident that the IC management was in the lead
43 concerning IC COVID care. Also, the communication between management and ICU staff on the work
44 floor was experienced as sufficient and efficient. The medical centre had an outbreak management
45 team consisting of qualified clinicians, in which the intensivists were represented. They had the
46 authority to contribute to the dialogue on a medical centre level and enabled the rapid decision
47 making cycles regarding the organisation of COVID-19 care in the hospital.
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52 The medical centre's higher management undertook several actions to show their appreciation (such
53 as handing out flowers and sending postcards to all staff members), but all ICU staff did not always
54 note these due to busy clinical activities. Furthermore, as these efforts were not consistently
55 recognised, some of the nurses indicated that they perceived a lack of support from higher
56 management.
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59 5. Quality of care

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3 Some of the nurses admitted that they had the feeling that, due to the high workload, only the most
4 basic care could be given, resulting in suboptimal care for the most critically ill patients. Also, staff
5 who were not trained to work in an ICU were employed there with the best intentions, but this was
6 perceived likewise to affect the quality of care. Finally, some nurses had the impression that hygiene
7 rules were followed less strictly and that fewer incident notifications due to the high workload. This
8 could be caused by the fact that personnel from other departments was working in the ICU and was
9 unknown of the rules regarding hygiene, but also workload could be a reason.
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13 Intensivists reported being worried about the level of exposure and resulting expertise level of
14 fellows. Their worries focused mainly on the fact that the exposure and corresponding knowledge
15 level of fellows would resultantly be high regarding infections (such as COVID-19) but low regarding
16 other diseases since these were (almost) not present during the COVID-19 pandemic. Subsequently,
17 they perceived that this group of intensivists would be only and perhaps suboptimally trained in a
18 limited number of diseases.
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21 6. Personal and professional support

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23 ICU staff experienced strong support from their partners and families. As a result, there was time to
24 rest at home, and especially the nursing staff mentioned that they were allowed to talk about their
25 experiences with their partners. However, differences between nursing staff and intensivists were
26 evident. The latter felt even more at ease than the nursing staff since their partners even more
27 covered childcare. On top of this, due to COVID-19, personal calendars for ICU staff were empty
28 anyway (e.g., no celebrations and no sports games), so there was ample time to reload for the next
29 shift.
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33 Also, the appreciation from colleagues outside the ICU and even outside the medical centre was very
34 much valued by ICU staff. Because of this support, they experienced more recognition for their work
35 in the ICU. Intensivists also stated that friends and family now understood much better than before
36 what their work entailed.
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39 **Discussion**

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42 This study showed that working during the COVID-19 pandemic catalysed interprofessional
43 collaboration and learning in the ICU on an individual and team level, centred around a common
44 goal: taking care of critically ill COVID-19 patients. The consequence of being on the same page
45 during the initial phase of the pandemic was that all kinds of provisions were taken care of quicker
46 than usual, without delays caused by bureaucracy. Nevertheless, unfortunately, this effect was
47 experienced to be transient.
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51 All other departments outside of the ICU helped reduce the administrative and workload for the ICU.
52 Working agreements and rules from before the crisis were considered less important, which was
53 highly appreciated by ICU staff. However, the study also showed that after the first peak of the crisis,
54 the willingness to continue this working method diminished again to a point where it is business as
55 usual, and bureaucracy is standard.
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57 The ICU was in the lead with telling what was needed to be done. This led to the observation that ICU
58 management was always a step ahead of the COVID crisis in making plans to increase COVID-19
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3 patients further. In addition, the intensivists experienced the organisation of covid care as efficient
4 and effective during this period.

5 ICU personnel highly appreciated the helping hands from other departments within the medical
6 centre. However, at the same time, this meant more work for (some of) the nurses since they had to
7 supervise more patients, and the extra help was less qualified. Another study also shows that it is
8 advisable to consider work experience and levels of competence when reorganising the ICU unit for
9 the well-being of the nurses.[27] Also, the difficulties of working in another department and the
10 importance of acknowledgement by colleagues were found in other studies. [28, 29]

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15 This study also found that the highest impact during working during the pandemic resulted from the
16 fact that patients died lonely without their families present at the bedside. This finding is also shown
17 in other studies which report that this fact lacked the desired dignity, and the burden was higher for
18 relatives even though ICU staff did their best to accompany and dignify death.[30, 31]

21 Strengths and limitations

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23 We used AI as the basis of our interview guide since this method is suitable to emphasise the positive
24 lessons learned without neglecting the negative experiences. However, what we have learned during
25 the execution of this study is that although we did our utmost best to focus on the positive lessons
26 learned during the first wave of the pandemic, we noticed that the interviewees kept on emphasising
27 what they had experienced as unfavourable and the issues that did not go well workwise.

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30 Another strength of this study is the mixed group of ICU staff. We included both nurses and
31 intensivists with a wide range of experience, which has led to remarkable findings since the
32 viewpoints of these subgroups are different on the same topics (such as the improved
33 interprofessional collaboration and the perceived appreciation from higher management).

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37 A limitation of this study is that the region in which our medical centre is located had the highest
38 number of COVID-19 patient admissions during the first peak. Therefore, the results of the high
39 workload we have found could probably not be extrapolated to the rest of the Netherlands.
40 However, we have also seen in other European countries that the workload for health professionals
41 has been enormous. [28, 32-34] So, our findings could still be helpful in (international) comparisons.

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45 Furthermore, the interviews were limited to ICU staff; this could be a reason for limited
46 comparability to other studies in which a more mixed group of clinicians (physiotherapists, dieticians,
47 pharmacists, radiologists) have been interviewed.[29, 34] Unfortunately, we ended up with an
48 unequal gender distribution in the group of intensivists, with a male predominance. This could also
49 influence the results since male intensivists reported, for example, more free time than female
50 intensivists. This can be explained by the fact that women, in general, are more likely than males to
51 be responsible for childcare or schooling and household tasks.[35]

52
53 Finally, we focused on the first wave of the COVID-19 pandemic in this study. Comparing the
54 interviewees' experiences in the second and/or the third wave could have added new insights.
55 However, this first evaluation already gave good insights into the positive and negative experiences
56 of the ICU personnel during their work during this first peak.

59 Conclusion and recommendations

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3 The positivity of the helping hands from outside the ICU department during COVID-19 was striking.
4 However, although communication and collaboration were intensified and strengthened during the
5 pandemic, these effects were unfortunately transient. Furthermore, the following findings were the
6 most remarkable: the burden of limited possibilities to help patients and families in the palliative
7 phase, the perceived lack of appreciation from higher management, the concern for keeping the
8 quality of care to the expected level and the acknowledgement considering the ICU work from
9 people outside of the hospital.
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13 The limited contact with family has been morally distressing for ICU staff; without knowledge about
14 the person they treat makes it difficult to see them as individuals. Therefore, our advice is to focus
15 more on sharing information concerning the individual patient among care staff also in a crisis.
16 During the interviews, some possible solutions were proposed. For instance, a poster that hangs
17 close to all patients showing their name, hobbies and other personal information. Supporting
18 personnel, like administrative staff, could contact the family to help fill this poster. It would make the
19 work for ICU staff more personal.
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23 We also learned that the staff of medical centres never again want to deny visitors to see their next
24 of kin, especially when patients are in the palliative phase. Furthermore, the authors of this
25 manuscript believe that it could be helpful to have a "pool" of trained ICU nurses to deploy in case of
26 crisis. However, at the same time, the specialisation to become an ICU nurse takes several years;
27 thus, it will take some time to fill this "pool". Luckily, we have seen that ICU staff is willing to
28 prioritise their work in such a crisis so patients and the care, in general, can beat the pandemic.
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31 Nurses had the perception that they could not deliver the quality of care that they usually do. A
32 potential solution could be debriefing. They can discuss these concerns at the end of their shifts,
33 which prevents them from keeping being worried, and possible solutions can be found. The
34 effectiveness of these debriefing sessions should be investigated further in the future.[36]
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37 Also, the perception of a lack of appreciation by the higher management of the hospital was
38 remarkable. This is a point of attention for the future; how to make their efforts more visible to all
39 (ICU) staff.
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42 Considering these results, we believe that further research concerning team reflexivity might
43 contribute to (or enhance) our knowledge about working together during and after a crisis.
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Contributorship statement

DK and WS conceived and designed the study with input from RR and IH. DK and WS collected the data. DK, WS and BM conducted the data analysis, with input from IH, WM and RR. Data were interpreted by DK, WS and BM, with input from IH, WM and RR. DK wrote the first draft of this manuscript with input from WS, BM, WM, IH and RR. All authors made revisions to the manuscript and approved submission of the final manuscript for publication.

Competing interests

No potential competing interest was reported by the authors.

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Data sharing agreement

Data will not be made available until one year after reporting of the final results of this study. Data are available upon reasonable request. The data consists of the manuscripts of the interviews. Requests for sharing of deidentified individual patient data should be sent via e-mail to the corresponding author and will be reviewed on a case-by-case basis by the authors. In case the request is approved, the receiving party agrees to the applicable terms and conditions in a data-sharing agreement, after which the data will be made available.

Ethical approval and privacy

The Maastricht University Medical Centre (MUMC+) ethics committee approved the study (reg. number 2020-2292). Data has been managed in accordance with the Dutch Personal Data Protection Act and Medical Research (Human Subjects) Act, and all data has been processed anonymously. All participants provided written informed consent for their participation in this study.

References

1. Zucker, I.H., *Is Teamwork Still Possible during a Global Pandemic?* Am J Physiol Heart Circ Physiol, 2020. **319**(1): p. H1-H2.
2. Stoye, E., *The pandemic in pictures: how coronavirus is changing the world.* Nature, 2020.
3. Tannenbaum, S.I., et al., *Managing teamwork in the face of pandemic: evidence-based tips.* BMJ Qual Saf, 2020.
4. Bosveld, M.H., et al., *Lessons learned: Contribution to healthcare by medical students during COVID-19.* J Crit Care, 2021. **63**: p. 113-116.
5. Donkers, M.A., et al., *Moral distress and ethical climate in intensive care medicine during COVID-19: a nationwide study.* BMC Med Ethics, 2021. **22**(1): p. 73.
6. Goddard, A.F. and M. Patel, *The changing face of medical professionalism and the impact of COVID-19.* Lancet, 2021. **397**(10278): p. 950-952.

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7. Ministerie van Volksgezondheid, W.e.S. *RIVM: Rijksinstituut voor Volksgezondheid en Milieu*. 2020; Available from: <https://www.rivm.nl/>.
8. Cook, T.M., *Personal protective equipment during the coronavirus disease (COVID) 2019 pandemic - a narrative review*. *Anaesthesia*, 2020. **75**(7): p. 920-927.
9. Shanafelt, T., J. Ripp, and M. Trockel, *Understanding and Addressing Sources of Anxiety Among Health Care Professionals During the COVID-19 Pandemic*. *JAMA*, 2020.
10. Monzani, A., et al., *COVID-19 Pandemic: Perspective from Italian Pediatric Emergency Physicians*. *Disaster Med Public Health Prep*, 2020: p. 1-11.
11. Ruderman, C., et al., *On pandemics and the duty to care: whose duty? who cares?* *BMC Med Ethics*, 2006. **7**: p. E5.
12. Nickell, L.A., et al., *Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution*. *CMAJ*, 2004. **170**(5): p. 793-8.
13. Corley, A., N.E. Hammond, and J.F. Fraser, *The experiences of health care workers employed in an Australian intensive care unit during the H1N1 Influenza pandemic of 2009: a phenomenological study*. *Int J Nurs Stud*, 2010. **47**(5): p. 577-85.
14. Piquette, D., S. Reeves, and V.R. LeBlanc, *Stressful intensive care unit medical crises: How individual responses impact on team performance*. *Critical Care Medicine*, 2009. **37**(4): p. 1251-1255.
15. Reader, T.W., R. Flin, and B.H. Cuthbertson, *Communication skills and error in the intensive care unit*. *Curr Opin Crit Care*, 2007. **13**(6): p. 732-6.
16. Weller, J., M. Boyd, and D. Cumin, *Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare*. *Postgrad Med J*, 2014. **90**(1061): p. 149-54.
17. Leonard, M., S. Graham, and D. Bonacum, *The human factor: the critical importance of effective teamwork and communication in providing safe care*. *Qual Saf Health Care*, 2004. **13** **Suppl 1**: p. i85-90.
18. Schmutz, J. and T. Manser, *Do team processes really have an effect on clinical performance? A systematic literature review*. *Br J Anaesth*, 2013. **110**(4): p. 529-44.
19. Cooperrider, D.W., D. , *A positive revolution in change: Appreciative inquiry*. 2001.
20. Barrett, F.J., & Fry, R. E, *Appreciative inquiry: A positive approach to building cooperative capacity*. 2005.
21. Cooperrider, D., *A CONTEMPORARY COMMENTARY ON APPRECIATIVE INQUIRY IN ORGANIZATIONAL LIFE (in the volume 4 Advances in Appreciative Inquiry, 2013)*. *Advances in Appreciative Inquiry*, Emerald Publishing, 2013. **4**: p. 3-67.
22. Bushe, G.R., *Appreciative Inquiry Is Not (Just) About The Positive*. *OD Practitioner*, 2007. **39**(4): p. 30-35.
23. Armstrong, A.J., C.M. Holmes, and D. Henning, *A changing world, again. How Appreciative Inquiry can guide our growth*. 2020. **2**(1): p. 100038.
24. Cooperrider, D.L. and R. Fry, *Appreciative Inquiry in a Pandemic: An Improbable Pairing*. *Journal of Applied Behavioral Science*, 2020. **56**(3): p. 266-271.
25. Tong, A., P. Sainsbury, and J. Craig, *Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups*. *Int J Qual Health Care*, 2007. **19**(6): p. 349-57.
26. Braun, V. and V. Clarke, *Using thematic analysis in psychology*. *Qualitative Research in Psychology*, 2006. **3**(2): p. 77-101.

- 1
2
3 27. Pagnucci, N., et al., *The effects of the reorganisation of an intensive care unit due to COVID-19 on nurses' wellbeing: An observational cross-sectional study*. Intensive Crit Care Nurs, 2021. **67**: p. 103093.
- 4
5
6
7 28. Hallgren, J., et al., *'Who will do it if I don't?' Nurse anaesthetists' experiences of working in the intensive care unit during the COVID-19 pandemic*. Aust Crit Care, 2021.
- 8
9
10 29. Kotera Y, O.A., Miyatake H, Tsunetoshi C, Nishikawa Y, Kosaka M, Tanimoto T. , *Qualitative Investigation into the Mental Health of Healthcare Workers in Japan during the COVID-19 Pandemic*. Int J Environ Res Public Health, 2022. **19**(1).
- 11
12
13 30. Hernandez-Fernandez, C. and C. Meneses-Falcon, *Nobody Should Die Alone. Loneliness and a Dignified Death During the COVID-19 Pandemic*. Omega (Westport), 2021: p. 302228211048316.
- 14
15
16
17 31. Schloesser, K., et al., *"Saying goodbye all alone with no close support was difficult"- Dying during the COVID-19 pandemic: an online survey among bereaved relatives about end-of-life care for patients with or without SARS-CoV2 infection*. BMC Health Serv Res, 2021. **21**(1): p. 998.
- 18
19
20
21
22 32. Ruiz-Frutos, C., et al., *Psychological Distress Among Occupational Health Professionals During Coronavirus Disease 2019 Pandemic in Spain: Description and Effect of Work Engagement and Work Environment*. Front Psychol, 2021. **12**: p. 765169.
- 23
24
25
26 33. Bruyneel, A., A. Lucchini, and M. Hoogendoorn, *Impact of COVID-19 on nursing workload as measured with the Nursing Activities Score in intensive care*. Intensive Crit Care Nurs, 2021: p. 103170.
- 27
28
29
30 34. Jáuregui Renaud K, C.-B.D., Martínez-Pichardo E, Miguel Puga JA, Rascón-Martínez DM, Sánchez Hurtado LA, Colin Martínez T, Espinosa-Poblano E, Anda-Garay JC, González Diaz JI, Cardeña E, Avelar Garnica F, *Acute Stress in Health Workers during Two Consecutive Epidemic Waves of COVID-19*. Int J Environ Res Public Health. , 2021. **19**(1).
- 31
32
33
34
35 35. Frank, E., et al., *Experiences of Work-Family Conflict and Mental Health Symptoms by Gender Among Physician Parents During the COVID-19 Pandemic*. Jama Network Open, 2021. **4**(11).
- 36
37
38 36. Schmutz, J.B., M. Kolbe, and W.J. Eppich, *Twelve tips for integrating team reflexivity into your simulation-based team training*. Med Teach, 2018. **40**(7): p. 721-727.
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COREQ (CONsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the interview or focus group?	
Duration	21	What was the duration of the interviews or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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The COVID-19 pandemic: a qualitative study with an opportunity-centric approach from an ICU perspective in a teaching hospital – upsides worth to secure?

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1 The COVID-19 pandemic: a qualitative study with an opportunity- 2 centric approach from an ICU perspective in a teaching hospital – 3 upsides worth to secure? 4

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1 **Summary**

2 Objectives

3 During the COVID-19 pandemic, the staff in the intensive care unit (ICU) was materially, physically, and
4 emotionally challenged. This qualitative study investigated the effects that ICU staff experienced and
5 were considered of value to be permanently implemented.

6 Setting

7 ICU in an university medical centre during the first wave of the COVID-19 pandemic.

8 Design

9 An opportunity-centric approach was applied in individual semi-structured interviews to optimise the
10 achieved results and was guided by the theoretical model of appreciative inquiry (AI).

11 Participants

12 Fifteen ICU staff members (8 nurses and 7 intensivists) participated.

13 Results

14 Working during the COVID-19 pandemic catalysed interprofessional collaboration and team learning
15 in the ICU on an individual and team level, centred around a common goal: taking care of critically ill
16 COVID-19 patients. The effect of interprofessional collaboration was that provisions were taken care
17 of quicker than usual, without bureaucratic delays. However, this effect was experienced to be
18 transient. Also, ICU staff perceived limited possibilities to help patients and families around the
19 palliative phase, and they perceived a lack of appreciation from higher management. This is a point of
20 future attention: how to make this perceived lack of appreciation more visible to all (ICU) staff.

21 Conclusion

22 Regarding our primary question, the ICU staff voiced that they the direct communication and
23 collaboration are the most important elements of the COVID-19 peak they would like to preserve.
24 Furthermore, it was learned that consolation and support for family members should not be forgotten.
25 Considering the results, we believe that further research concerning team reflexivity might contribute
26 to (or enhance) our knowledge about working together during and after a crisis.

27

28 **Strengths and limitations of this study**

- 29 • We used appreciative inquiry as the basis of our interview guide since this method is suitable to
30 emphasise the positive lessons learned without neglecting the negative experiences
- 31 • Another strength of this study is the mixed group of ICU staff (both nurses and intensivists) we
32 have interviewed.
- 33 • Also, the ICU was an unique environment during the COVID-19 pandemic since the impact of the
34 COVID-19 pandemic was very high on both patients and ICU staff.
- 35 • A limitation of this study is that the interviews were only held in one single centre.
- 36 • Another limitation is that the interviews were limited to ICU staff.

37

Objectives

The COVID-19 pandemic has an ongoing worldwide impact on healthcare. In February 2020, the first patient was admitted to the intensive care unit (ICU) in the Netherlands, whereas a month later, this number had increased to over 1,100 patients nationwide.[1] As the pandemic spread, personnel in the ICU were materially, physically, and emotionally challenged. Several studies underlined the high risk of viral contamination necessitating the wearing of personal protective equipment (PPE), which further intensified the work.[2, 3] In addition, ICU personnel worked long days under high work pressure while having concerns about their health and their families and colleagues.[4-7] Because of the shortage of ICU staff in relation to the working conditions and workload, elective medical and surgical procedures were suspended, critical care trained staff working in other departments or retired personnel were reclaimed, and trainees, as well as temporary healthcare workers, were redeployed.[8] Participation in other than standard team compositions and interactions, collaboration, and communication between colleagues who were not usually working together provided a real challenge.[9-11] Communication with and between patients and their families likewise changed. Bedside visits by family members were no longer allowed; video conferencing enabled family members to communicate with their relatives and (para)medical staff. The operational structure of the ICU unit was thus reshaped, and processes were rapidly adapted, as previously shown by other studies.[12-15] Whereas the mental and physical effects of the pandemic on health care workers, family members, and patients and lessons learned have extensively been studied[7-9, 16-18], it remains unclear which organisational changes benefited work pressure and workload for ICU professionals during (one of) the COVID-19 peaks, and which changes were experienced so valuable that they are worthwhile to maintain implemented permanently, on ICU level or hospital level. Therefore, we aimed to evaluate which temporary changes in the ICU's organisational structure (e.g. different staffing and changed processes during the COVID-19 pandemic) were considered worthwhile to preserve as perceived by the ICU staff.

Methods

Design

We executed a qualitative study using individual semi-structured face-to-face interviews among ICU staff active during the first peak (between February and July 2020) of the COVID-19 pandemic applying an opportunity-centric approach. We chose individual interviews since we were interested in the individual opinions of the ICU staff members and wanted to prevent possible peer pressure and hierarchical influences. Moreover, it was challenging to gather a larger group of staff at the same time due to busy schedules. The study period was between September and December 2020, just after the first peak. Furthermore, the COREQ checklist for qualitative studies was used.[19]

Patients and public involvement

Patients and public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

Opportunity centric approach and theoretical model

An opportunity-centric approach was applied, which aims to optimise the achieved results. The theoretical model of appreciative inquiry (AI) was used to guide the opportunity-centric approach. AI has been developed to explore and discover possibilities and positively transform systems and teams

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3 1 in organisations toward a shared vision.[20] In its broadest focus, AI involves systematically discovering
4 2 everything that supports a system when it is most active.[21-23] AI focuses upon a mindset of
5 3 abundance (what does work) versus scarcity or the problem (what does not work).[24] AI is, therefore,
6 4 valid during a pandemic since it might just then reach its highest potential for impact in organisations
7 5 and human systems. Resilience, even during a pandemic, can therefore grow.[25]
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11 7 *Interview guide*

12 8 The questions in the semi-structured interview guide were based on the theoretical background (AI);
13 9 by positively framing these, they were compiled by WS (she/her) and DK (she/her).

14 10 The main questions we touched upon during the interview were:

- 15 11 - What have you appreciated while working in the ICU during the COVID-19 pandemic?
- 16 12 - Which of these items would you like to be maintained in general?
- 17 13 What has given you resilience?
- 18 14

19 15 *Interviews*

20 16 The interviews were conducted by an experienced researcher (WS) who took field notes during the
21 17 interviews. The semi-structured interview questions were adapted and probed into rationales behind
22 18 the answers applied where necessary during the interviews. The interviews were recorded and were
23 19 held in the ICU or, with a few exceptions, digitally via MS Teams.
24 20

25 21 *Context and setting*

26 22 The study was performed in the Maastricht UMC+, a university medical centre with 715 beds and a
27 23 level 3 ICU (60 beds – of which 33 for pediatric/neonatal care) providing a regional coordinating
28 24 function for ICU patients in the South-East of the Netherlands. During the first covid-19 wave the ICU
29 25 had 56 beds for adult COVID patients, and 16 beds for regular care operational. Usually the patient
30 26 staff ratio is 1:1, during this peak it was 1:2 during the day and 1:3 during the night. These temporary
31 27 extra ICU beds were scattered over different departments within the hospital to take care of these
32 28 high number of severely ill COVID-19 patients.
33 29

34 30 *Participants & sampling*

35 31 All ICU staff employed during this first peak of the COVID-19 pandemic in the ICU in Maastricht UMC+
36 32 between February and July 2020 were eligible for inclusion. Inclusion was performed using
37 33 convenience sampling combined with purposive sampling to achieve diversity regarding the staff's
38 34 position (nurse and physicians, respectively), age, gender, experience, expertise, and (if applicable)
39 35 speciality. Inclusion was continued till data saturation was reached.

40 36 Invitations to participate were sent by e-mail. We used two lists (one for the nurses and one for the
41 37 intensivists which consisted of all staff who had worked on the ICU between February and July 2020.
42 38 Then we picked every fifth name on the list and compiled a new list. In this new list we checked
43 39 whether there was enough variation regarding gender, work experience and age. First, we approached
44 40 14 ICU staff members for participation in our study. After the first invitation, 3 staff members agreed
45 41 to participate in the study. The others were sent a reminder but without any success. After that,
46 42 another group of 15 staff members were invited to participate (by compiling a new list in the same
47 43 manner as described before). This resulted in another 6 candidates. As the inclusion faltered, we
48 44 decided to adjust our sampling from convenience sampling to purposive sampling. We then
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1 approached 6 potential participants personally. They were all willing to participate. In total, we invited 35 candidates.

Data collection & data analysis

We collected demographic data including age, gender, and work experience. The recorded interviews were transcribed verbatim and anonymised by trained (medical) students who signed a confidentiality agreement. The participants checked the transcripts for correctness and completeness (member checking). Afterwards, the anonymised interviews were read and independently coded by three female researchers (WS/BM/DK). Differences in coding were resolved by consensus. The data were analysed using standard principles of thematic analysis.^[26] For the analysis, text fragments were highlighted for correspondence to the categories. Throughout all interviews, we identified key themes by grouping the codes into larger themes. The findings within the categories were discussed among the three researchers until a consensus was reached.

Results

15 ICU staff members (8 nurses, 7 intensivists) participated. Their age ranged from 23 to 63 years (intensivists: 37-52 yrs and nurses: 23-63 yrs). Their ICU experience ranged between 1-18 years for intensivists (median 8 yrs) and 1-40 years for nurses (median 12yrs). The duration of the interviews was between 20 and 40 minutes (mean 25 minutes).

Table 1: characteristics of the participants

Staff	Age	Gender	ICU experience
Nurse 1	52	F	20
Nurse 2	26	F	2
Nurse 3	62	M	21
Nurse 4	23	F	1
Nurse 5	60	M	30
Nurse 6	27	F	4
Nurse 7	30	F	4
Nurse 8	63	F	40
Intensivist 1	43	M	8
Intensivist 2	52	M	18
Intensivist 3	41	M	9
Intensivist 4	37	M	1
Intensivist 5	40	V	5
Intensivist 6	41	M	5
Intensivist 7	50	M	15

After the categorisation, the following main themes were derived:

1. Burden and benefits of working during COVID-19
2. Patient and family restrictions increase the emotional burden on ICU staff
3. Collaboration
4. Management support and appreciation
5. Quality of care
6. Personal and professional support

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3 1 These themes will consecutively be discussed with illustrative quotes from the interviews with N(urses)
4 2 and I(ntensivists), see table 1. The term ICU staff is used when we refer to both nurses and intensivists
5 3 together.

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8 4 1. Burden and benefits of working during COVID-19
9 5

10 6 The intensivists did not experience longer work shifts than usual (10 hours during weekdays and 12
11 7 hours during weekend days) but had to work more frequent and busier shifts since more hands were
12 8 needed during the shifts to be able to care for the increased number of patients admitted and
13 9 consulted for. They classified COVID-19 as a very interesting disease they had never experienced, and
14 10 thus working was seen as a challenge rather than a burden.

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18 11 *“The services were actually very clearly divided. There were a lot of shifts, but because there were*
19 12 *actually many of us, it made the work doable” I1 (43, male, 8 yrs IC experience)*

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21 13 ICU staff (nurses and intensivists) had more patients under their care than usual (2 to 3 instead of 1),
22 14 and they had more responsibilities. This resulted in a much higher work pressure where decisions had
23 15 to be made quickly. However, at the same time, the feeling of “us against the virus” was felt as very
24 16 positive. Finally, ICU staff agreed that this cohesion would be important to keep in the future.

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27 17 *“Yes, I found that feeling of, um, putting shoulders together, I found that really very pleasant, and I*
28 18 *think that is also really something we need to maintain.” N2 (26, female, 2 yrs IC experience)*

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30 19 ICU staff anticipated as much as possible in various ways (mentally and organisation wise) for the
31 20 arrival of COVID-19 patients. However, at the same time, the impact of these patients on their work
32 21 burden and treatment options was, of course, largely unknown. They indicated that they had to work
33 22 hard (long shifts with large numbers of patients under their supervision) to manage this increasing
34 23 patient group. The treatment of these patients was experienced to be intensive, and the physical
35 24 characteristics of the patients (such as their weight) who were admitted made care extra difficult.

36
37 25 In addition to the increased number of shifts and patients admitted, ICU staff experienced extra
38 26 exhausting shifts because of the necessity to frequently change PPE when moving from a ward with
39 27 COVID-19 patients to a ward with non-COVID-19 patients. ‘Sometimes it was difficult that you had to
40 28 work completely isolated, and it is just very tiring with mouth masks on and constantly getting changed
41 29 and being cautious that you do not infect yourself or your colleagues.’ N2 (26, female, 2 yrs IC
42 30 experience)

43
44 31 At the beginning of the pandemic, the moral and physical support and appreciation from people
45 32 outside the medical centre were heartwarming. For instance, there was a huge banner put up on the
46 33 side of the parking lot of the medical centre with supporting words from football supporters, and ICU
47 34 staff frequently received food and flowers from local restaurants and shops. But unfortunately, this
48 35 support diminished as the national restrictions (lockdown) continued.

49
50 36 *“There was still laughter, people worked hard, but you just get appreciation from each other, also*
51 37 *from outside, every night there was a box of, with some goodies from some restaurant ready. So, you*
52 38 *already know what you are doing that that is important, which gives satisfaction in what you are*
53 39 *already doing, even in such a crisis situation.” I1 (43, male, 8 yrs IC experience)*
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3 1 2. Patient and family restrictions to prevent the spreading of COVID-19 increase the emotional
4 2 burden on ICU staff
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6 3 During the beginning of the pandemic, the medical centres' higher management (comparable to other
7 4 Dutch hospitals) ruled that visitors were not allowed in departments with COVID-19 patients, even
8 5 when patients were terminally ill. ICU staff generally agreed they felt morally distressed not allowing
9 6 families to visit. Usually, families are the prime information source for the admitted and intubated
10 7 patients, and now the ICU staff felt that they did not know anything about admitted patients, except
11 8 their names and underlying illness, COVID-19 and its sequelae. Furthermore, ICU staff felt that all
12 9 patients were very similar and more or less lost their identity because of the large communalities in
13 10 their clinical course. Usually, for ICU patients, posters are hung close to the bed with the patient's
14 11 hobbies, name and personal information on it, filled in by family.

15 12 *"We get a lot of information from the family, especially for intubated patients. But they were not in the*
16 13 *picture now, so it really became a kind of numbers work, rather than personal."* N3 (62, male, 21 yrs
17 14 *ICU experience)*

18 15 However, later during the first peak, the family could see and talk to their loved ones via Zoom on
19 16 tablets, making it possible to gather more personal details about the admitted patient.

20 17 Nevertheless, physical contact was essentially impossible. Especially when patients were in the
21 18 palliative phase without being surrounded by their family and friends, the impact on ICU staff was
22 19 enormous. They often felt despaired, unable to allow a proper, dignified and respectful farewell to
23 20 loved ones. Ultimately, all interviewed ICU staff agreed that they never wanted to deal with not
24 21 allowing visits to patients or patients to die all alone again, regardless of the circumstances.

25 22 *"It was terrible in the first period that patients died without family members being able to say goodbye.*
26 23 *That breaks your heart, that is not how you want to leave the world yourself."* N5 (60, male, 30 yrs IC
27 24 *experience)*

28 25 3. Collaboration
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30 26 At the time of the first peak, intensivists, nurses, paramedics, students, and recently retired staff from
31 27 outside of the ICU who volunteered were scheduled to work in the ICU, with or without a preparatory
32 28 course, to help. This help was highly appreciated (by the intensivists) and at the same time experienced
33 29 as a burden (by the nurses). Also, the nurses felt a high degree of responsibility: they had to take care
34 30 of more patients despite extra staff from outside of the ICU who were not qualified for all actions that
35 31 the ICU staff usually executes. As a result, the permanent ICU nurses felt that they had to direct others
36 32 on top of providing care for their patients.

37 33 *"Normally, you are familiar with your team, and you know how everyone functions, and now you were*
38 34 *working in other collaborations and people you did not know beforehand or maybe had seen once."* N1
39 35 *(52, female, 20 yrs ICU experience)*

40 36 ICU staff (both clinicians and nurses) noticed that the interdisciplinary and interprofessional
41 37 collaboration between and with other departments significantly improved during the first wave. One
42 38 common goal was identified: treating COVID-19 patients. Official rules and viscous agreements were
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3 1 subsequently pushed aside by employees from other departments to support each other as quickly
4 2 and as well as possible.

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6 3 *"I think in some ways, or yes actually in all ways, that the greater good was more important than*
7 4 *personal opinions. This is bigger than ourselves and all the disagreements that there are or struggles*
8 5 *from the past that's not important now."* N2 (26, female, 2 yrs ICU experience)

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11 6 After this initial promising spin-off of working together on one common goal, ICU staff noticed that as
12 7 the pandemic continued and to the outside world appeared to decline, the other non-ICU departments
13 8 likewise returned to 'business as usual'. They reported that slowly but surely, the benevolence of other
14 9 departments diminished, and bureaucracy returned

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17 10 The opening of new temporary "ICUs" (extra ICU beds in several departments) and the involvement of
18 11 colleagues from other departments resulted in new interprofessional team compositions, which were
19 12 also sometimes hard for ICU staff to get used to. Especially the nurses occasionally experienced
20 13 difficulties adapting to those new working conditions. Nevertheless, most intensivists agreed that the
21 14 atmosphere was commonly positive and inspiring.

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24 15 *"I have to say that one time it was busy, and you saw many colleagues from outside that came to help,*
25 16 *both nurses and doctors. There was an enormous positive vibe, and I always get excited when other*
26 17 *people get excited too. So, it was very much that feeling of, together we will go for it."* I1 (43, male, 8
27 18 *yrs ICU experience)*

29 19 4. Management support and appreciation

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32 20 To a greater or lesser extent, ICU staff felt supported by their management team. Most of them felt
33 21 taken seriously and involved when the plans for upscaling were created. These plans consisted of the
34 22 following steps to be taken when the admission rate of COVID-19 patients would even further
35 23 increase (hypothetically). Intensivists indicated that, due to efficient leadership, the next step in
36 24 upscaling plans was ready to be executed whenever the number of admitted COVID-19 would even
37 25 further increase. Decisions were executed quickly: it was evident that the IC management was in the
38 26 lead concerning IC COVID care. Also, the communication between management and ICU staff on the
39 27 work floor was experienced as sufficient and efficient. The medical centre had an outbreak
40 28 management team consisting of qualified clinicians, in which the intensivists were represented. They
41 29 had the authority to contribute to the dialogue on a medical centre level and enabled the rapid
42 30 decision-making cycles regarding the organisation of COVID-19 care in the hospital.

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45 31 *"The fact that the next steps were always clear of okay if we only have so many beds free now, then*
46 32 *we will go to the next stage and then we have to do this and this and this, and that gave uh at least for*
47 33 *me as a staff member that gave much peace."* I5 (40, female, 5 yrs IC experience)

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52 34 The medical centre's higher management undertook several actions to show their appreciation (such
53 35 as handing out flowers and sending postcards to all staff members), but not all ICU staff always noted
54 36 these due to busy clinical activities. Furthermore, as these efforts were not consistently recognised,
55 37 some of the nurses indicated that they perceived a lack of support from higher management.

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58 38 *"The organisation could have shown more commitment. No idea what they were doing during that*
59 39 *COVID period. We did get a daily update from the IC, but we did not really get updates on the*

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3 1 *organisation that they were involved with or whether they were doing anything for us" N4 (23, female,*
4 2 *1 yr IC experience)*

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6 3 5. Quality of care

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9 4 Some of the nurses admitted that they had the feeling that, due to the high workload, only the most
10 5 basic care could be given, resulting in suboptimal care for the most critically ill patients. Also, staff who
11 6 were not trained to work in an ICU were employed there with the best intentions, but this was
12 7 perceived likewise to affect the quality of care. Finally, some nurses had the impression that hygiene
13 8 rules were followed less strictly and that fewer incident notifications due to the high workload. This
14 9 could be caused by the fact that personnel from other departments was working in the ICU (according
15 10 to the interviewees) and was unknown of the rules regarding hygiene, but also workload could be a
16 11 reason.

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20 12 *"In that period, things have not been handled according to our protocol, of course, you cannot accept*
21 13 *that in normal time." N5 (60, male, 30 yrs IC experience)*

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23 14 Several intensivists reported being worried about the level of exposure and resulting expertise level of
24 15 fellows. Their worries focused mainly on the fact that the exposure and corresponding knowledge level
25 16 of fellows would resultantly be high regarding infections (such as COVID-19) but low regarding other
26 17 diseases since these were (almost) not present during the COVID-19 pandemic. Subsequently, they
27 18 perceived that this group of intensivists would be only and perhaps suboptimally trained in a limited
28 19 number of diseases.

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32 20 *"The extent of teaching, what worries me is that I also notice to myself and my fellow intensivists, and*
33 21 *I also notice to the fellows that the stretch is also just gone you cannot keep burdening people in this*
34 22 *way, and you know at the end of the line they have to be intensivists." I7 (50, male, 15 yrs IC*
35 23 *experience)*

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38 24 6. Personal and professional support

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40 25 ICU staff experienced strong support from their partners and families. As a result, there was time to
41 26 rest at home, and especially the nursing staff mentioned that they were allowed to talk about their
42 27 experiences with their partners. However, differences between nursing staff and intensivists were
43 28 evident. The latter felt even more at ease than the nursing staff since their partners even more covered
44 29 childcare. On top of this, due to COVID-19, personal calendars for ICU staff were empty anyway (e.g.,
45 30 no celebrations and no sports games), so there was ample time to reload for the next shift.

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48 31 *"If I look at it very selfishly, it was a top time. It meant I worked six days, and then if I had time off, it*
49 32 *was during the week. The weather was pretty nice. So, I have never been on the bike as much as I*
50 33 *have been this year." I2 (52, male, 18 yrs experience)*

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53 34 Also, the appreciation from colleagues outside the ICU and even outside the medical centre was very
54 35 much valued by ICU staff. Because of this support, they experienced more recognition for their work
55 36 in the ICU. Intensivists also stated that friends and family now understood much better than before
56 37 what their work entailed.

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3 1 *“There was a lot in the news about the ICU. I do not have to explain now what an intensivist is.*
4 2 *Everybody knows that now. Not only within the hospital but also outside the hospital.” 17 (50, male,*
5 3 *15 yrs experience)*

4 **Discussion**

5 This study showed that working during the COVID-19 pandemic catalysed interprofessional
6 collaboration and learning in the ICU on an individual and team level, centred around a common goal:
7 taking care of critically ill COVID-19 patients. The consequence of being on the same page during the
8 initial phase of the pandemic was that all kinds of provisions were taken care of quicker than usual,
9 without delays caused by bureaucracy. Nevertheless, unfortunately, this effect was experienced to be
10 transient by the ICU staff.

11 Departments outside of the ICU helped to reduce the workload for the ICU. Working agreements and
12 rules from before the crisis were considered less important, which was highly appreciated by ICU staff.
13 However, the study also showed that after the first peak of the crisis, the willingness to continue this
14 working method diminished again to a point where it is business as usual, and bureaucracy is standard.
15 The ICU was in the lead with telling the board of directors what was needed to be done. This led to the
16 observation that ICU management was always a step ahead of the COVID crisis in making plans when
17 the admission rate of COVID-19 patients would increase even further. In addition, the intensivists
18 experienced the organisation of COVID care as efficient and effective during this period.

19 Literature shows that clear roles of team members, commitment to a common goal, heterogeneity of
20 knowledge, skills, competencies, and experiences of members, mutual trust, and good leadership are
21 the key characteristics of successful teams.[27, 28] Also, a dedicated crisis management teams is a very
22 important factor during a crisis. team.[29] Our study showed that some of these elements were
23 present within our organisation, such as the commitment to a common goal and the presence of a
24 crisis management team. This contributed to a cooperative atmosphere. However, the level of
25 knowledge, skills and competencies of the help from outside of the ICU was lower than expected by
26 the ICU nurses. These difficulties of working in another department and the importance of
27 acknowledgement by colleagues were also found in other studies. [30, 31]

28 This current study also found that the highest impact on ICU staff resulted from the fact that patients
29 died alone. This finding is also shown in other studies which report that this fact lacked the desired
30 dignity, and the burden was higher for relatives even though ICU staff did their best to accompany and
31 dignify death.[32, 33]

34 Strengths and limitations

35 The ICU was an unique environment during the first COVID-19 peak, but considering the global nature
36 of the pandemic, and the absence of pre-existing protocols and guidelines for the disease, the novel
37 findings could still be generalizable to other departments, for example, the support of students and
38 nurses from other disciplines helping out. We interviewed ICU staff members individually and also by
39 anonymizing the results we assured that the participants could freely discuss everything they wanted
40 to share.

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3 1 We took into account the experience of the interviewed staff members. Also, we asked questions how
4 2 the situation in the hospital had an effect on their situation at home and how could have an influence
5 3 on the experienced impact. However, we only interviewed ICU staff in a single hospital. The impact in
6 4 other centres could have been experienced differently. Probably there were even more or significantly
7 5 less COVID-19 patients, the staff rating could be higher or the support from higher management could
8 6 be different. At the same time, working methods were comparable since the heads of the ICs regularly
9 7 discussed the way of working and had the same measures (such as limiting the visitors) But still, the
10 8 experience staff had in our centre could be different from the experience other IC staff had. However,
11 9 we have also seen in other European countries that the workload for health professionals has been
12 10 enormous. [30, 34-36]
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18 12 We took time for the data collection during and after the peak of the first wave. We paid attention to
19 13 include a wide range of intensivists and nurses of difference age, different gender and different level
20 14 of experience. Also, we did a member check in which the interviewees could read the interviews and
21 15 could add or adapt if necessary. Three researchers individually coded the interviews and agreement
22 16 was reached via consensus. The use of an interview guide resulted in the same questions for all
23 17 interviewees, but we inquired on certain topics. Finally, we used only one method for data collection
24 18 which is a slight disadvantage.
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27 19 Also, we made a clear research protocol in which the setting, methods, research questions and the
28 20 used theory was described. During the research we have stucked tot his protocol. Only the inclusion
29 21 of the participants was harder than expected, therefore we have slight changed this procedure. Two
30 22 of the three executive researchers were no part of the existing IC team, therefore they didn't have
31 23 any premise or opinion of the experiences within the ICU during the COVID-19 pandemic.
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34 24 Furthermore, the interviews were limited to ICU staff; this could be a reason for limited comparability
35 25 to other studies in which a more mixed group of clinicians (physiotherapists, dieticians, pharmacists,
36 26 radiologists) have been interviewed.[31, 36] Unfortunately, we ended up with an unequal gender
37 27 distribution in the group of intensivists, with a male predominance. This could also had an influence
38 28 on the results since male intensivists reported, for example, more free time than female intensivists.
39 29 This could be explained by the fact that women, in general, are more likely than males to be responsible
40 30 for childcare or schooling and household tasks.[37] Also, we could have added patients and their
41 31 families to the interviewees to add their perspectives on for example the visitation regulations.
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48 34 Finally, we focused on the first wave of the COVID-19 pandemic in this study. Comparing the
49 35 interviewees' experiences in the second and/or third wave could have added new insights. However,
50 36 this first evaluation already showed good insights into the positive and negative experiences of the ICU
51 37 personnel during their work during this first peak.
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53 38 Conclusion and recommendations

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55 39 Regarding our primary question, the ICU staff voiced that they the direct communication and
56 40 collaboration are the most important elements of the COVID-19 peak they would like to preserve.
57 41 Furthermore, it was learned that consolation and support for family members should not be forgotten.
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3 1 The limited contact with family has been morally distressing for ICU staff; without knowledge about
4 2 the person they treat makes, it difficult to see them as individuals. Therefore, our advice is to focus
5 3 more on sharing information concerning the individual patient among care staff especially in a crisis.
6 4 During the interviews, some possible solutions were proposed. The posters that usually hang close to
7 5 all patients could still be used, although the family was not present to fill them out. Supporting
8 6 personnel, like administrative staff, could contact the family to help fill out this poster. It would have
9 7 made the work for ICU staff more personal.
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13 8 We also learned that ICU staff never again wants to deny visitors to see their next of kin, especially
14 9 when patients are in the palliative phase. Furthermore, the authors of this manuscript believe it could
15 10 be helpful to have a "pool" of trained ICU nurses to deploy in a crisis. However, at the same time, the
16 11 specialisation to become an ICU nurse takes several years; thus, it will take some time to fill this "pool".
17 12 Luckily, we have seen that ICU staff is willing to prioritise their work in such a crisis so patients and
18 13 care, in general, can beat the pandemic.

21 14 ICU nurses had the perception that they could not meet the usual high standards of care. A potential
22 15 solution could be debriefing, ICU nurses could then discuss their concerns at the end of their shifts,
23 16 which prevents them from remaining worried, and possible quick fixes could be found. The
24 17 effectiveness of these debriefing sessions should be investigated further in the future.[38] To improve
25 18 perceived quality levels of care, we think that nurses also should be encouraged to develop and co-
26 19 create ideas of which the management subsequently supports implementation.
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30 20 Also, the perception of a lack of appreciation by the higher management of the hospital was
31 21 remarkable. This is a point of attention for the future; how to make their efforts more visible to all ICU
32 22 staff. Considering the results, we believe that further research concerning team reflexivity might
33 23 contribute to (or enhance) our knowledge about working together during and after a crisis.
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Contributorship statement

DK and WS conceived and designed the study with input from RR and IH. DK and WS collected the data. DK, WS and BM conducted the data analysis, with input from IH, WM and RR. Data were interpreted by DK, WS and BM, with input from IH, WM and RR. DK wrote the first draft of this manuscript with input from WS, BM, WM, IH and RR. All authors made revisions to the manuscript and approved submission of the final manuscript for publication.

Competing interests

No potential competing interest was reported by the authors.

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Data sharing agreement

Data will not be made available until one year after reporting of the final results of this study. Data are available upon reasonable request. The data consists of the manuscripts of the interviews. Requests for sharing of deidentified individual patient data should be sent via e-mail to the corresponding author and will be reviewed on a case-by-case basis by the authors. In case the request is approved, the receiving party agrees to the applicable terms and conditions in a datasharing agreement, after which the data will be made available.

Ethical approval and privacy

The Maastricht University Medical Centre (MUMC+) ethics committee approved the study (reg. number 2020-2292). Data has been managed in accordance with the Dutch Personal Data Protection Act and Medical Research (Human Subjects) Act, and all data has been processed anonymously. All participants provided written informed consent for their participation in this study.

1 References

1. Ministerie van Volksgezondheid, W.e.S. *RIVM: Rijksinstituut voor Volksgezondheid en Milieu*. 2020; Available from: <https://www.rivm.nl/>.
2. Cook, T.M., *Personal protective equipment during the coronavirus disease (COVID) 2019 pandemic - a narrative review*. *Anaesthesia*, 2020. **75**(7): p. 920-927.
3. Shanafelt, T., J. Ripp, and M. Trockel, *Understanding and Addressing Sources of Anxiety Among Health Care Professionals During the COVID-19 Pandemic*. *JAMA*, 2020.
4. Monzani, A., et al., *COVID-19 Pandemic: Perspective from Italian Pediatric Emergency Physicians*. *Disaster Med Public Health Prep*, 2020: p. 1-11.
5. Ruderman, C., et al., *On pandemics and the duty to care: whose duty? who cares?* *BMC Med Ethics*, 2006. **7**: p. E5.
6. Nickell, L.A., et al., *Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution*. *CMAJ*, 2004. **170**(5): p. 793-8.
7. Donkers, M.A., et al., *Moral distress and ethical climate in intensive care medicine during COVID-19: a nationwide study*. *BMC Med Ethics*, 2021. **22**(1): p. 73.
8. Bosveld, M.H., et al., *Lessons learned: Contribution to healthcare by medical students during COVID-19*. *J Crit Care*, 2021. **63**: p. 113-116.
9. Tannenbaum, S.I., et al., *Managing teamwork in the face of pandemic: evidence-based tips*. *BMJ Qual Saf*, 2020.
10. Corley, A., N.E. Hammond, and J.F. Fraser, *The experiences of health care workers employed in an Australian intensive care unit during the H1N1 Influenza pandemic of 2009: a phenomenological study*. *Int J Nurs Stud*, 2010. **47**(5): p. 577-85.
11. Piquette, D., S. Reeves, and V.R. LeBlanc, *Stressful intensive care unit medical crises: How individual responses impact on team performance*. *Critical Care Medicine*, 2009. **37**(4): p. 1251-1255.
12. Reader, T.W., R. Flin, and B.H. Cuthbertson, *Communication skills and error in the intensive care unit*. *Curr Opin Crit Care*, 2007. **13**(6): p. 732-6.
13. Weller, J., M. Boyd, and D. Cumin, *Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare*. *Postgrad Med J*, 2014. **90**(1061): p. 149-54.
14. Leonard, M., S. Graham, and D. Bonacum, *The human factor: the critical importance of effective teamwork and communication in providing safe care*. *Qual Saf Health Care*, 2004. **13** **Suppl 1**: p. i85-90.
15. Schmutz, J. and T. Manser, *Do team processes really have an effect on clinical performance? A systematic literature review*. *Br J Anaesth*, 2013. **110**(4): p. 529-44.
16. Zucker, I.H., *Is Teamwork Still Possible during a Global Pandemic?* *Am J Physiol Heart Circ Physiol*, 2020. **319**(1): p. H1-H2.
17. Stoye, E., *The pandemic in pictures: how coronavirus is changing the world*. *Nature*, 2020.
18. Goddard, A.F. and M. Patel, *The changing face of medical professionalism and the impact of COVID-19*. *Lancet*, 2021. **397**(10278): p. 950-952.
19. Tong, A., P. Sainsbury, and J. Craig, *Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups*. *Int J Qual Health Care*, 2007. **19**(6): p. 349-57.
20. Cooperrider, D.W., D. , *A positive revolution in change: Appreciative inquiry*. 2001.
21. Barrett, F.J., & Fry, R. E, *Appreciative inquiry: A positive approach to building cooperative capacity*. 2005.
22. Cooperrider, D., *A CONTEMPORARY COMMENTARY ON APPRECIATIVE INQUIRY IN ORGANIZATIONAL LIFE (in the volume 4 Advances in Appreciative Inquiry, 2013)*. *Advances in Appreciative Inquiry*, Emerald Publishing, 2013. **4**: p. 3-67.
23. Bushe, G.R., *Appreciative Inquiry Is Not (Just) About The Positive*. *OD Practitioner*, 2007. **39**(4): p. 30-35.

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3 1 24. Armstrong, A.J., C.M. Holmes, and D. Henning, *A changing world, again. How Appreciative Inquiry can guide our growth*. 2020. **2**(1): p. 100038.
- 4 2
5 3 25. Cooperrider, D.L. and R. Fry, *Appreciative Inquiry in a Pandemic: An Improbable Pairing*.
6 4 Journal of Applied Behavioral Science, 2020. **56**(3): p. 266-271.
- 7 5 26. Braun, V. and V. Clarke, *Using thematic analysis in psychology*. Qualitative Research in
8 6 Psychology, 2006. **3**(2): p. 77-101.
- 9 7 27. Mickan, S. and S. Rodger, *Characteristics of effective teams: a literature review*. Aust Health
10 8 Rev, 2000. **23**(3): p. 201-8.
- 11 9 28. Thompson, L.L., *Making the team. A guide for managers*. 2015, Boston.
- 12 10 29. Gilpin, D.R., *Crisis Management in a Complex World*. 2008: Oxford University Press.
- 13 11 30. Hallgren, J., et al., 'Who will do it if I don't?' Nurse anaesthetists' experiences of working in
14 12 the intensive care unit during the COVID-19 pandemic. Aust Crit Care, 2021.
- 15 13 31. Kotera Y, O.A., Miyatake H, Tsunetoshi C, Nishikawa Y, Kosaka M, Tanimoto T. , *Qualitative
16 14 Investigation into the Mental Health of Healthcare Workers in Japan during the COVID-19
17 15 Pandemic*. Int J Environ Res Public Health, 2022. **19**(1).
- 18 16 32. Hernandez-Fernandez, C. and C. Meneses-Falcon, *Nobody Should Die Alone. Loneliness and a
19 17 Dignified Death During the COVID-19 Pandemic*. Omega (Westport), 2021: p.
20 18 302228211048316.
- 21 19 33. Schloesser, K., et al., "Saying goodbye all alone with no close support was difficult"- Dying
22 20 during the COVID-19 pandemic: an online survey among bereaved relatives about end-of-life
23 21 care for patients with or without SARS-CoV2 infection. BMC Health Serv Res, 2021. **21**(1): p.
24 22 998.
- 25 23 34. Ruiz-Frutos, C., et al., *Psychological Distress Among Occupational Health Professionals During
26 24 Coronavirus Disease 2019 Pandemic in Spain: Description and Effect of Work Engagement
27 25 and Work Environment*. Front Psychol, 2021. **12**: p. 765169.
- 28 26 35. Bruyneel, A., A. Lucchini, and M. Hoogendoorn, *Impact of COVID-19 on nursing workload as
29 27 measured with the Nursing Activities Score in intensive care*. Intensive Crit Care Nurs, 2021: p.
30 28 103170.
- 31 29 36. Jáuregui Renaud K, C.-B.D., Martínez-Pichardo E, Miguel Puga JA, Rascón-Martínez DM,
32 30 Sánchez Hurtado LA, Colin Martínez T, Espinosa-Poblano E, Anda-Garay JC, González Díaz JI,
33 31 Cardeña E, Avelar Garnica F, *Acute Stress in Health Workers during Two Consecutive Epidemic
34 32 Waves of COVID-19*. Int J Environ Res Public Health. , 2021. **19**(1).
- 35 33 37. Frank, E., et al., *Experiences of Work-Family Conflict and Mental Health Symptoms by Gender
36 34 Among Physician Parents During the COVID-19 Pandemic*. Jama Network Open, 2021. **4**(11).
- 37 35 38. Schmutz, J.B., M. Kolbe, and W.J. Eppich, *Twelve tips for integrating team reflexivity into your
38 36 simulation-based team training*. Med Teach, 2018. **40**(7): p. 721-727.
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COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the interview or focus group?	
Duration	21	What was the duration of the interviews or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.