



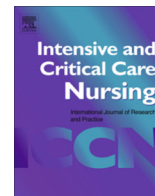
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Contents lists available at ScienceDirect

Intensive & Critical Care Nursing

journal homepage: www.elsevier.com/icc

Research Article

Conditions and strategies to meet the challenges imposed by the COVID-19-related visiting restrictions in the intensive care unit: A Scandinavian cross-sectional study



Hanne Irene Jensen^{a,b,c,*}, Eva Åkerman^{d,e}, Ranveig Lind^{f,g}, Hanne Birgit Alfheim^h, Gro Frivoldⁱ, Isabell Fridh^{j,k}, Anne Sophie Ågård^{l,m}

^a Department of Anaesthesiology and Intensive Care, Kolding Hospital, University Hospital of Southern Denmark, Kolding, Denmark

^b Department of Anaesthesiology and Intensive Care, Vejle Hospital, University Hospital of Southern Denmark, Vejle, Denmark

^c Department of Regional Health Research, University of Southern Denmark, Odense, Denmark

^d Department of Perioperative Medicine and Intensive Care, Karolinska University Hospital, Sweden

^e Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

^f Department of Health and Care Sciences, Faculty of Health Sciences, UiT The Arctic University of Norway, Tromsø, Norway

^g Intensive Care Unit, University Hospital of North Norway, Tromsø, Norway

^h Faculty of Health, VID Specialized University, Oslo, Norway

ⁱ Department of Health and Nursing Science, Faculty of Health and Sport Sciences, University of Agder, Grimstad, Norway

^j Department of Anaesthesiology, Surgery, and Intensive Care, Sahlgrenska University Hospital, Gothenburg, Sweden

^k Faculty of Caring Science, Work Life and Social Welfare, University of Borås, Sweden

^l Department of Intensive Care, Aarhus University Hospital, Aarhus, Denmark

^m Department of Science in Nursing, Aarhus University, Aarhus, Denmark

ARTICLE INFO

Article history:

Received 20 May 2021

Revised 1 July 2021

Accepted 16 July 2021

Keywords:

COVID-19

Family

Relatives

ICU

Survey

Visitation

ABSTRACT

Objectives: To examine conditions and strategies to meet the challenges imposed by the coronavirus disease 2019 (COVID-19)-related visiting restrictions in Scandinavian intensive care units.

Research methodology/design: A cross-sectional survey.

Setting: Adult intensive care units in Denmark, Norway and Sweden.

Main outcome measures: Likert scale responses and free-text comments within six areas: capacity and staffing, visiting policies and access to the unit, information and conferences with relatives, written information, children as relatives and follow-up initiatives.

Results: The overall response rate was 53% (74/140 participating units). All intensive care units had planned for capacity extensions; the majority ranging between 11 and 30 extra beds. From March–June 2020, units had a mean maximum of 9.4 COVID-19 patients simultaneously. Allowing restricted visiting was more common in Denmark (52%) and Norway (61%) than in Sweden where visiting was mostly denied except for dying patients (68%), due to a particular increased number of COVID-19 patients. The restrictions forced nurses to compromise on their usual standards of family care. Numerous models for maintaining contact between relatives and patients were described.

Conclusion: Visitation restrictions compromised the quality of family care and entailed dilemmas for healthcare professionals but also spurred initiatives to developing new ways of providing family care.

© 2021 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Implication for clinical practice

- The COVID-19 pandemic has required comprehensive visiting restrictions in the intensive care unit.
- The restrictions force nurses to compromise on usual standards of family care.
- Alternative ways to maintain patient-family contact must be applied.

* Corresponding author at: Department of Anaesthesiology and Intensive Care, Kolding Hospital, University Hospital of Southern Denmark, Kolding, Denmark
E-mail address: hanne.irene.jensen@rsyd.dk (H.I. Jensen).

Introduction

Millions of people have been diagnosed with coronavirus disease 2019 (COVID-19) worldwide, and more than three million people have died from this infectious disease (WHO, 2021). Many patients diagnosed with COVID-19 need advanced medical treatment to survive, and 14% of hospitalised COVID-19 patients needed treatment in intensive care units (ICUs) (Richardson et al., 2020). Critical illness not only affects the life of the patient but also the lives of the close relatives who suddenly must deal with the acute, critical illness and perhaps fear of losing a loved one, and in this pandemic, they may be infected with the disease themselves. Consequently, the pandemic has entailed numerous challenges for the healthcare system and the care for critically ill ICU patients and their relatives. For ICU patients, close relatives play a vital role during the ICU admission and throughout convalescence, and patients treasure their love and support (Bergbom and Askwall, 2000; Linnarsson et al., 2010; Ågård et al., 2015).

To contain the spreading of the Coronavirus, several measures have been implemented, including strict hospital visitation restrictions (Jansson et al., 2020). The restriction has resulted in limited possibilities for relatives to visit patients in the ICU. An open visitation policy is a cornerstone for relatives to be able to visit and be involved in the care of their critically ill loved ones (Vandall-Walker and Clark, 2011) and may reduce long-term psychological health problems for families (Fumis et al., 2015; Jacob et al., 2016). Consequently, the novel visitor restrictions represent a historic break with a strong tradition where healthcare professionals make an effort to welcome the relatives, and the restrictions may have a negative impact on patients, relatives and healthcare professionals (Downar and Kekewich; 2021, Rose et al., 2020; Valley et al., 2020). For many ICU professionals, keeping relatives informed solely via the telephone or attempting to connect the patient and relatives using digital communication devices are novel challenges (Marra et al., 2020; Mendiola et al., 2021; Rose et al., 2020; Sasangohar et al., 2020; Scelsi, 2020). However, policies for maintaining contact at a distance may also prove useful at ordinary times for relatives who for different reasons cannot visit the ICU, as well as during future pandemics.

During the COVID-19 pandemic, healthcare professionals' daily routines in the ICU have changed, for example, visiting policies, increased use of personal protective equipment and changes in staffing. Working in the ICU during the COVID-19 pandemic has been associated with psychological symptoms, such as depression, anxiety and stress among staff (Hammond et al., 2021; Heesakkers et al., 2021; Gormez et al., 2021; Cag et al., 2021), and overworked and stressed staff often experience that their possibilities to support the patients' relatives are limited and challenging (Azoulay et al., 2021).

Acknowledging that the COVID-19 pandemic has limited relatives' access to patients in the ICU and that this situation is challenging for healthcare professionals, this study aimed to examine conditions and strategies to meet the challenges imposed by the COVID-19-related visiting restrictions in the ICU.

Methods

Setting

The study was a cross-sectional survey among adult ICUs in Denmark, Norway and Sweden.

Ethical approval

The survey was carried out in accordance with the Declaration of Helsinki and registered with the Danish Data Protection Agency (20/2513) on behalf of all three countries. According to the legislation in all three countries, studies without patient information or use of human biological material do not require approval from the Regional Committees on Health Research Ethics. However, some institutions require that all projects should be approved by a research board. Approval was obtained for this study. Study participants were informed that participation was voluntary and that results would be kept confidential and reported anonymously. Participants consented to take part in the study by completing the questionnaire.

Participants

Adult ICUs in Denmark, Norway and Sweden were invited to participate. Self-standing paediatric ICUs were excluded. In Denmark and Norway, all adult ICUs received the questionnaire (39 and 57, respectively), in Sweden 44 out of 73 adult ICUs accepted to receive the questionnaire. One ICU nurse coordinator or clinical nurse specialist from each ICU was asked to respond on behalf of their respective ICUs.

Data collection

In 2019, the research group responsible for this study conducted a survey among adult ICUs in Denmark, Norway, Sweden and Finland regarding different aspects of patient care in the ICU, involving the relatives (paper submitted). The same ICU research group conducted a questionnaire survey in this study concerning experienced challenges and strategies for family care despite COVID-19-induced restrictions on ICU visiting. The questionnaire was developed based on the 2019 study on literature and the general experiences from the COVID-19 crisis. The questionnaire consisted of six sections: ICU capacity and staffing, visiting policies and access to the ICU, information and conferences with relatives, written information, children as relatives and follow-up initiatives. All sections included both Likert scale questions and options of writing free text. The questionnaire was translated into all three languages and was pilot tested by two ICU nurses from Denmark, one from Norway, and two from Sweden. The survey was distributed via the electronic survey system SurveyXact to the participants' work e-mail in mid-November 2020. The three countries had the first COVID-19 wave in March-June 2020, and the questions were specifically targeting these first four months of the pandemic, where the COVID-19 situation and dealing with visiting restrictions were novel challenges. If no response was received within 2 weeks, a reminder e-mail was sent, which includes a new link to the questionnaire. No follow-up survey was conducted, but the participants were asked if visiting restrictions were eased during the study period (March-June 2020), and if restrictions were still applied at the time of the survey (November/December 2020).

Data analysis

Quantitative data were analysed using descriptive statistics. Categorical variables are presented as numbers and percentages, and continuous variables are presented with mean and range. Qualitative data in the form of free-text comments (typically 1–3 lines varying up to 14 lines) was analysed inspired by a content

analysis method (Graneheim and Lundman, 2004). Most of the comments were related to specific questions and sections. However, across the free-text comments more overall codes, sub-categories and categories were identified to elaborate on the quantitative responses. Due to the overall quantitative design of the study, analysis of latent content was not performed. Instead, the categories identified at a manifest level were described. Danish, Norwegian and Swedish are fairly similar languages, and authors representing all three countries read all comments and participated in the analysis. First, the comments from each country were analysed separately. Later, after several rounds of analysis consensus was reached on a cross-national description of the qualitative findings elaborating on the quantitative responses. Below, the findings from the free-text comments are described in continuation of the quantitative results from each of the six sections of the questionnaire.

Results

The response rate was 53%, with 74 of the 140 participating adult ICUs: Denmark 62% (24/39), Norway 35% (20/57) and Sweden 69% (30/44).

ICU capacity and staffing

The majority of the ICUs were of a high or intermediate level. Due to the possible need for ICU treatment for numerous COVID-19 patients, all ICUs had planned for extensions of ICU capacity (Table 1).

In Denmark, 71% of the participating ICUs had assistance from staff without ICU training from other departments. Similarly, this was the case for Norway and Sweden at 37% and 100% of participating ICUs, respectively. Across the free-text comments ‘Changes to ICU nurses’ professional role’ was identified as an overall analytic category. The nurses had to shift from practicing bedside patient care to acting in a consultant role when staffs from other units such as surgery, anaesthesia, general wards or clinics were relocated to team up with skilled ICU nurses in the ICU. According to the nurses, the general level of ICU nursing competencies in the teams decreased, while the responsibility of the ICU nurses to educate and supervise novice ICU staff increased.

Visiting policies and access to the ICU

All ICUs had visiting restrictions. In Denmark and Norway, restricted access was most commonly reported. Swedish ICUs

mainly practiced no access, except for relatives of dying patients. Most ICUs had fixed COVID-19-induced overall criteria for visits. The individual decisions of whether access should be allowed or not within the overall criteria were usually a joint decision made by the intensivist and the patient’s nurse, but it could also be decided by either the nurse, the intensivist or the management (Table 2).

Overall, 77% of the ICUs loosened the restrictions within the first four months (March-June 2020), and 83% of them still had visiting restrictions at the time of the survey (November/December 2020). If access was allowed for relatives, it was mainly restricted to one or perhaps two persons, and most ICUs required that it was the same one or two visitors during the patient’s entire stay in the ICU. In addition, for 21% of ICUs, the visit was restricted to <30 min, for 24% 30–60 min and for 30%, there was no time restriction when access was allowed.

Across the free-text comments, ‘Balancing an overarching effort to prevent the transmission of COVID-19, considering individual emotions and social factors for patients and relatives’ was identified as an overall analytic category. In addition, considerations to protect health care personnel (unvaccinated) were mentioned as an important reason for implementing strict visiting regulations. Some of the nurses described how the restrictions forced them to compromise on their usual professional standards of family care: ‘We [normally] have a robust collaboration with relatives, but it has been extremely difficult to live up to a good standard if you have to comply with guidelines from the health authorities [regarding restrictions]’. Simultaneously, a few nurses, especially among the Swedish participants, described that during the first months of the pandemic they would not have had the time to care for the relatives. Other quotes indicated a level of moral as well as emotional strain on the ICU nurses as they sought to balance the restrictions and the needs of patients and relatives. Several of the nurses described making exceptions from the restrictions. A nurse wrote, ‘It is people we are dealing with, so individual considerations must be taken into account’. The nurses referred mainly to criteria decided at a national or hospital management level, while more specific criteria or unit-based guidelines were not mentioned. A nurse described how in her ward—while applying several precautionary measures—a COVID-19-positive relative was allowed to visit a COVID-19-negative patient who was awake and dying. The nurse further described ‘It was experienced as a difficult dilemma but subsequently as an ethically and humanely right decision’. In addition, the everyday decision-making concerning visiting appeared to be a source of possible intercollegiate strain. A nurse wrote, ‘Sometimes the nurses disagreed on whether we could loosen the restrictions’, while another said, ‘The restrictions

Table 1
Planning of ICU capacity and impact of pandemic.

	Total		Denmark		Norway		Sweden	
Extension of ICU capacity (n/%)								
1–10 extra beds	18	(25)	3	(13)	8	(42)	7	(23)
11–20 extra beds	17	(24)	6	(26)	4	(21)	7	(23)
21–30 extra beds	18	(25)	9	(39)	0	(0)	9	(30)
31–40 extra beds	9	(13)	1	(4)	5	(26)	3	(10)
41–50 extra beds	4	(6)	2	(9)	0	(0)	2	(7)
More than 50 extra beds	5	(7)	2	(9)	2	(11)	1	(3)
Max number of patients March–June 2020 (mean/range)	9.4	(0–81)	6.2	(0–18)	4.8	(0–16)	14.6	(2–81)
COVID-19 positive per 100,000 citizens (n)								
July 1st ¹ , 2020			220		165		650	
December 1st ¹ , 2020			1404		673		2545	
COVID-19 deaths per 100,000 citizens (n)								
July 1st ¹ , 2020			10		5		53	
December 1st ¹ , 2020			14		6		70	

¹Or as close to the date as reported by the authorities and based on quartile data on number of citizens
Of the three countries, Sweden had the highest number of COVID-19 ICU patients, and Norway the lowest (Table 1).

Table 2
Visiting restrictions and policies.

	Total		Denmark		Norway		Sweden	
	n ¹ = 69	%	n = 23	%	n = 18	%	n = 28	%
Visiting restrictions								
No access	5	(7)	2	(9)	1	(6)	2	(7)
No access except for dying patients	34	(49)	9	(39)	6	(33)	19	(68)
Restricted access	28	(41)	12	(52)	11	(61)	5	(18)
Other	2	(3)	0	(0)	0	(0)	2	(3)
Set criteria for visits (Yes)	43	(63)	13	(57)	14	(78)	16	(59)
Who could allow access ²								
Patient's nurse	23	(33)	9	(39)	6	(33)	8	(29)
Intensivist	33	(49)	6	(26)	7	(39)	20	(71)
Management	23	(33)	8	(35)	9	(50)	6	(21)
Joint decision	36	(52)	15	(65)	9	(50)	12	(43)
Other ³	8	(12)	4	(17)	4	(22)	0	(0)

¹Different n in individual variables due to missing data.

²Possible to choose more than one answer.

³I.e.: "Overall guidelines", "Depending on the time (Day/night or weekday/weekend)", "Also in collaboration with physician from parent ward".

have hit a bit hard and sometimes unfair, when some [patients] were allowed more visits than others, depending on which staff was responsible'.

Contact between relatives and healthcare professionals

Most ICUs (53%) described that the frequency of physician-family conversations depended on what was required in the individual patient case (Denmark 70%, Norway 53% and Sweden 39%), and 40% described that the conversations were conducted daily (Denmark 17%, Norway 47% and Sweden 54%). Most ICUs (56%) did not have a set time for the conversations. Nurses always or often participated in the conversations in 68% of Danish ICUs, 53% in Norwegian ICUs and 7% of Swedish ICUs.

The free-text comments described various ways of keeping in contact with and informing relatives. Due to the high workload, especially at the beginning of the pandemic, and difficulty for staff to talk when wearing protective equipment, there was limited opportunity for close relatives to call and get in touch with the staff. Instead, many ICUs implemented new routines such as a daily telephone call where after rounds the physicians called the relatives to update them about the patient's condition. In Norway, this routine was implemented in many ICUs and consequently, the nurses had no contact with the relatives. In Denmark, a nurse described how in her ICU a nurse twice daily collected information about all the patients and subsequently contacted the relatives via the telephone. In Sweden, some ICUs implemented special telephone support lines staffed with a physician, social worker or psychologist who telephoned the relatives to provide psychosocial support. Moreover, the relatives could contact the support line if they were worried. During this process, other health care professionals took over the supportive role of relatives that ICU nurses used to provide prior to the pandemic, but nurses described missing important information regarding the patient that could have been obtained from the relatives themselves. A nurse wrote, 'There were no relatives to support the patient. They are an important part of the work if the patient is worried, and a source of information for the healthcare professionals about the patient'.

Contact between relatives and patients

Numerous models for maintaining contact between patients and their relatives were described in the free-text comments. Conscious and non-intubated patients could use their phones or tablets. If the patient was intubated and sedated, some nurses described contacting the relatives by phone, while holding the phone to the patient's ear. Since there were limited opportunities

to visit the ICU, a variety of digital communication solutions were applied to maintain contact between patients and relatives representing a breakthrough in the application of virtual communication tools in Scandinavian ICUs. The nurses described using phones, tablets and computers for establishing video contact via Skype, Facetime, Zoom, Visiba Care or Teams. Some ICUs in Denmark and Norway only used secured hospital digital platforms with specific logon procedures while others also used non-secured technologies. In addition, relatives were encouraged to e-mail photos of the family and encouraging letters to be printed and hung by the patient's bed. A nurse described that the relatives were encouraged to make short video greetings to the patient. A few nurses also described emailing photos of the patient to the relatives.

Written information

During the first few months of the pandemic, most ICUs rarely or never provided written information to relatives regarding patient treatment (75%) or about being a family member of an ICU patient (54%); Denmark and Norway provided more written information compared to Sweden. The free-text comments described that some ICUs managed to transfer the written information to a webpage to enable access to the relatives from their location, while others described that the written information was only provided for relatives who visited the ICU.

Children as relatives

Most of the ICUs (70%) did not have any special initiatives for under-age relatives during the first four months with visiting restrictions. A Swedish ICU described that from March to June 2020 they were supported by a social worker and a psychologist who checked with all the patients if there were under-age relatives, and if so, a plan for contact was formulated. Likewise, either the counsellor or the psychologist was always present for support during the visits.

Diaries and follow-up initiatives

Despite the increased workload due to the increasing number of COVID-19 patients, 87% of Danish, 82% of Norwegian and 44% of Swedish ICUs maintained their normal practice regarding the use of patient diaries. As described in some of the free-text comments from Swedish ICUs, the staffs were unable to maintain writing diaries during the first few months of the pandemic due to the lack of

time. However, the practice was resumed by the end of the study period when the number of COVID-19 patients decreased.

Similarly, 57% of Danish, 94% of Norwegian and 29% of Swedish ICUs maintained their normal practice regarding follow-up conversations for relatives. This significant decrease observed in Swedish ICUs, as described in the free-text comments, was because many had insufficient resources to conduct follow-up conversations and others had converted to a telephone conversation. However, one ICU had improved their follow-up practice because the counsellor and psychologist described above, who took special care of under-age relatives, contacted all the relatives for follow-up, something the ICU had not prioritised before.

Discussion

The COVID-19 pandemic has entailed comprehensive visiting restrictions for relatives of patients in the ICU. The workload and stress on ICU staff have been immense, and in addition to dealing with a new infectious disease and the possible substantial increase in ICU capacity, the ICU staff had to find new ways to care for and support the relatives.

During the study period, Sweden had the highest number of COVID-19 patients in the ICU, and Norway had the lowest, reflecting the differences in cumulated incidence of COVID-19 positive per 100,000 citizens. The level of strain on the nurses is mirrored in their descriptions of their experiences and efforts to care for the relatives during the pandemic. Caring for the ICU patient is the main task for ICU healthcare professionals, and in times of crisis, other important tasks such as caring for relatives may have to be considered a lower priority task. However, literature shows that relatives' presence in the ICU is important both for the patient and the relatives themselves (Davidson et al., 2017; Linnarsson et al., 2010; Nassar Junior et al., 2018; Rosa et al., 2017; Ågård et al., 2015). Children and young relatives tend to be especially vulnerable and at risk of developing post-traumatic stress disorder after the ICU event (Ferge et al., 2021; Knutsson et al., 2017). Therefore, future pandemic strategies should also incorporate caring for relatives, including suggestions of maintaining contact between patients and their relatives when visits are restricted (Moore, 2020; Zante et al., 2020). Some of the Swedish ICUs described assigning non-ICU staff for different aspects of family care, and this emergency solution could perhaps be applied in other ICUs when the bedside ICU nurse is unavailable to care for the family. However, it represents a major change in the ICU nurse's professional role. In Scandinavia, the highly skilled ICU nurse is in charge of the individual patient's total care, knowing all the details (Ågård and Harder, 2007). Consequently, leaving family care with other professionals with less insight into the patient's condition may compromise the quality of this important task. Systematic evaluation of ICU practice and experiences with family care during the COVID-19 pandemic will provide a basis for well-thought-out professional solutions for providing family care during future pandemics.

Most participating ICUs had restricted visits instead of a total ban. This enabled the ICUs to make individual considerations and provide what was experienced as humane family care. However, sometimes this discretionary practice created dilemmas as the healthcare professionals not always agreed on when and how to deviate from the restrictions. Several inconsistencies in the practice of different healthcare professionals, including challenges with open access to the ICU have earlier been reported (Kleinpell et al., 2018). To minimise potential friction between healthcare professionals and frustration from relatives due to different stances, transparency in visiting policies from management and team decisions instead of individual decisions should be strived for. Furthermore, to support decision-making concerning ICU visiting during

restrictions on the individual patient-family case level, explicit unit-based descriptions specifying cases or situations where exceptions from the restrictions could be made would probably be helpful, for example, by further specifying overall patient categories such as 'the critically ill patient' or 'the dying patient'.

One of the most complicated challenges in connection with visitation restrictions is caring for the dying patient (Anneser, 2020; Chen, 2020; Nyatanga, 2020; Stilos and Moore, 2020). In the current study, several comments described how nursing discretion and exceptions to the visiting rules were applied in cases involving dying patients and how in these situations the needs of the patient and relatives took precedence over the need for infection control. Not being able to say goodbye to a loved one may negatively impact the relatives' experiences of death, as well as their grieving process, and is, therefore, a relevant and important prioritisation (Nelson-Becker and Callahan, 2021).

The free-text comments showed a high level of creativity and willingness from the health care professionals to support relatives and assist them with maintaining contact with the patients. This has also been reported by other healthcare professionals (Kanaris, 2021) and several different approaches have been created, both on the ICU (Cohen, 2020; Lipworth et al., 2021) and national levels (ComunicoCOVID, 2020; Rose et al., 2020). For some of the participating ICUs in the current study, the pandemic entailed general improvements in family care such as daily relative-intensivist conversations, new follow-up initiatives and methods to maintain contact between relatives and patients when physically apart. This knowledge may prove useful and beneficial even in non-pandemic situations, as relatives at normal times may have difficulties visiting the ICU due to, for example, long distances or illness. However, special caution should be taken regarding possible violation of the European General Data Protection Regulation (EU, 2021), as the use of Facetime, Skype, etc. are not secured communication platforms if not used on the patient's personal devices (Rose et al., 2020). Several secured methods for virtual contact have been developed (Rose et al., 2020), and these should be shared and implemented. Many respondents from the current study described family gratitude and satisfaction with frequent telephone updates and virtual options for family-patient contact. This was also reported in other studies (Kennedy et al., 2020; Sasangohar et al., 2020). However, for the patient, the value of verbal communication and in-person meetings between the ICU nurse and family members cannot be overestimated. Only close relatives can provide the patient's life history, including existential and spiritual needs, which are put in the forefront during a life crisis, such as getting infected with COVID-19 and needing intensive care.

Strengths and Limitations

Strengths of the study include the multinational design and participation of ICUs with different levels of pandemic impact. The study also has some limitations. First is the moderate response rate, which induces the risk of non-responder bias. Second, the study included only Scandinavian ICUs. The survey design does not provide opportunities to examine the reasons behind the responses and a more nuanced understanding of the impact of visiting restrictions on healthcare and relatives' experiences. This should be explored in future research using qualitative methods.

Conclusion

ICU visitation restrictions compromised the quality of family care and entailed dilemmas for healthcare professionals; however, they also created new ways of caring for relatives of patients in the ICU. Our findings also revealed that the high number of COVID-19 ICU patients during the surge burdened the ICU nurses and led to changes in their professional role. The usual close contact between

nurses and relatives has been disrupted, and other professionals have sometimes been their primary source of information concerning the patient. The consequences for patients, close relatives and nurses' ability to provide family-centered care will be of large interest to investigate when the current crisis has abated.

Conflicts of interest

None.

CRediT authorship contribution statement

Hanne Irene Jensen: Conceptualization, Methodology, Investigation, Formal Analyses, Writing – Original Draft, Writing – Review & Editing, Project Administration. **Eva Åkerman:** Conceptualization, Methodology, Formal Analyses, Writing – Original Draft, Writing – Review & Editing. **Ranveig Lind:** Conceptualization, Methodology, Formal Analyses, Writing – Original Draft, Writing – Review & Editing. **Hanne Birgit Alfheim:** Conceptualization, Methodology, Writing – Review & Editing. **Gro Frivold:** Conceptualization, Methodology, Writing – Review & Editing. **Isabell Fridh:** Methodology, Writing – Review & Editing. **Anne Sophie Ågård:** Conceptualization, Methodology, Formal Analyses, Writing – Original Draft, Writing – Review & Editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Ågård, A.S., Egerod, I., Tønnesen, E., Lomborg, K., 2015. From spouse to caregiver and back: a grounded theory study of post-intensive care unit spousal caregiving. *J. Adv. Nurs.* 71 (8), 1892–1903.

Ågård, A.S., Harder, I., 2007. Relatives' experiences in intensive care—finding a place in a world of uncertainty. *Intensive Crit. Care Nurs.* 23, 170–177.

Anneser, J., 2020. Dying patients with COVID-19: What should Hospital Palliative Care Teams (HPCTs) be prepared for?. *Palliat. Support Care* 18, 382–384.

Azoulay, E., Curtis, J.R., Kentish-Barnes, N., 2021. Ten reasons for focusing on the care we provide for family members of critically ill patients with COVID-19. *Intensive Care Med.* 47, 230–233.

Bergbom, I., Askwall, A., 2000. The nearest and dearest: a lifeline for ICU patients. *Intensive Crit. Care Nurs.* 16, 384–395.

Cag, Y., Erdem, H., Gormez, A., Ankarali, H., Hargreaves, S., Ferreira-Coimbra, J., Rubulotta, F., Belliato, M., Berger-Estilita, J., Pelosi, P., Blot, S., Lefrant, J.Y., Mardani, M., Darazam, I.A., Cag, Y., Rello, J., 2021. Anxiety among front-line health-care workers supporting patients with COVID-19: A global survey. *Gen. Hosp. Psychiatry* 68, 90–96.

Chen, E., 2020. Palliative Care and Ethical Considerations in the COVID-19 ICU. *Critical Care Alert* 28, 1–5.

Cohen, J.K., 2020. Walkie-talkie system keeps families connected to ICU patients. *Mod. Healthc.* 50, 24–24.

ComunicoCOVID, 2020. [How to communicate with families of patients in complete isolation during SARS-CoV-2 pandemic multidisciplinary working group "ComuniCoViD"]. *J. Recent. Prog. Med.* 111, 357–367.

Davidson, J.E., Aslakson, R.A., Long, A.C., Puntillo, K.A., Kross, E.K., Hart, J., Cox, C.E., Wunsch, H., Wickline, M.A., Nunnally, M.E., Netzer, G., Kentish-Barnes, N., Sprung, C.L., Hartog, C.S., Coombs, M., Gerritsen, R.T., Hopkins, R.O., Franck, L.S., Skrobik, Y., Kon, A.A., Scruth, E.A., Harvey, M.A., Lewis-Newby, M., White, D.B., Swoboda, S.M., Cooke, C.R., Levy, M.M., Azoulay, E., Curtis, J.R., 2017. Guidelines for family-centered care in the neonatal, pediatric, and adult ICU. *Crit. Care Med.* 45, 103–128.

Downar, J., Kekewich, M., 2021. Improving family access to dying patients during the COVID-19 pandemic. *Lancet Respir. Med.* 9, P335–P337.

EU, 2021. European General Data Protection Regulation [Online]. <https://eur-lex.europa.eu/eli/reg/2016/679/oj>. [Accessed May 3 2021].

Ferge, J.L., Banydeen, R., Le Terrier, C., Fize, H., Miguel, M., Kentish-Barnes, N., Jehel, L., Moroy, A., Valentino, R., Mehdaoui, H., 2021. Mental health of adolescent relatives of intensive care patients: benefits of an open visitation policy. *Am. J. Crit. Care* 30, 72–76.

Fumis, R.R., Ranzani, O.T., Faria, P.P., Schettino, G., 2015. Anxiety, depression, and satisfaction in close relatives of patients in an open visiting policy intensive care unit in Brazil. *J. Crit. Care* 30, 440.e1–6.

Gormez, A., Elbay, R.Y., Cag, Y., 2021. Has COVID-19 taken a heavier toll on the mental health of ICU nurses?. *Intensive Crit. Care Nurs.* 65, 103042.

Graneheim, U.H., Lundman, B., 2004. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ. Today* 24, 105–112.

Hammond, N.E., Crowe, L., Abbenbroek, B., Elliott, R., Tian, D.H., Donaldson, L.H., Fitzgerald, E., Flower, O., Grattan, S., Harris, R., Sayers, L., Delaney, A., 2021. Impact of the coronavirus disease 2019 pandemic on critical care healthcare workers' depression, anxiety, and stress levels. *Aust. Crit. Care* 34, 146–154.

Heesakkers, H., Zegers, M., Van Mol, M.M.C., Van den Boogaard, M., 2021. The impact of the first COVID-19 surge on the mental well-being of ICU nurses: A nationwide survey study. *Intensive Crit. Care Nurs.* 65, 103034.

Jacob, M., Horton, C., Rance-Ashley, S., Field, T., Patterson, R., Johnson, C., Saunders, H., Shelton, T., Miller, J., Frobos, C., 2016. Needs of patients' family members in an intensive care unit with continuous visitation. *Am. J. Crit. Care* 25, 118–125.

Jansson, M., Lorton, X., Rello, J., 2020. Strengthening ICU health security for a coronavirus epidemic. *Intensive Crit. Care Nurs.* 57, 102812.

Kanaris, C., 2021. Moral distress in the intensive care unit during the pandemic: the burden of dying alone. *Intensive Care Med.* 47, 141–143.

Kennedy, N.R., Steinberg, A., Arnold, R.M., Doshi, A.A., White, D.B., Delair, W., Nigra, K., Elmer, J., 2021. Perspectives on telephone and video communication in the ICU during COVID-19. *Ann. Am. Thorac. Soc.* 18, 838–847.

Kleinpell, R., Heyland, D.K., Lipman, J., Sprung, C.L., Levy, M., Mer, M., Koh, Y., Davidson, J., Taha, A., Curtis, J.R., 2018. Patient and family engagement in the ICU: report from the task force of the world federation of societies of intensive and critical care medicine. *J. Crit. Care* 48, 251–256.

Knutsson, S., Enskar, K., Golsater, M., 2017. Nurses' experiences of what constitutes the encounter with children visiting a sick parent at an adult ICU. *Intensive Crit. Care Nurs.* 39, 9–17.

Linnarsson, J.R., Bubini, J., Perseus, K.I., 2010. Review: a meta-synthesis of qualitative research into needs and experiences of significant others to critically ill or injured patients. *J. Clin. Nurs.* 19, 3102–3111.

Lipworth, A.D., Collins, E.J., Keitz, S.A., Hesketh, P.J., Resnic, F.S., Wozniak, J.M., Mosenthal, A.C., 2021. Development of a novel communication liaison program to support COVID-19 patients and their families. *J. Pain Symptom. Manage.* 61, e1–e10.

Marra, A., Buonanno, P., Vargas, M., Iacovazzo, C., Ely, E.W., Servillo, G., 2020. How COVID-19 pandemic changed our communication with families: losing nonverbal cues. *Crit. Care* 24, 1–2.

Mendiola, B., Gomez, C., Furst, C., Rasmussen-Winkler, J., 2021. Facilitating virtual visitation in critical care units during a pandemic. *Holist. Nurs. Pract.* 35, 60–64.

Moore, B., 2020. Dying during Covid-19. *Hastings Center Report* 50, 13–15.

Nassar Junior, A.P., Besen, B., Robinson, C.C., Falavigna, M., Teixeira, C., Rosa, R.G., 2018. Flexible versus restrictive visiting policies in ICUs: a systematic review and meta-analysis. *Crit. Care Med.* 46, 1175–1180.

Nelson-Becker, H., Callahan, A., 2021. When we can't say goodbye – loss, grief and dying during the COVID-19 pandemic. *Social Work Today* 20, 14.

Nyatanga, B., 2020. COVID-19 pandemic: changing the way we live and die. *Br. J. Commun. Nurs.* 25, 254–254.

Richardson, S., Hirsch, J.S., Narasimhan, M., Crawford, J.M., McGinn, T., Davidson, K. W., The Northwell, C.R.C., Barnaby, D.P., Becker, L.B., Chelico, J.D., Cohen, S.L., Cookingham, J., Coppa, K., Diefenbach, M.A., Dominello, A.J., Duer-Hefele, J., Falzon, L., Gitlin, J., Hajazadeh, N., Harvin, T.G., Hirschwerk, D.A., Kim, E.J., Koziel, Z.M., Marrast, L.M., Mogavero, J.N., Osorio, G.A., Qiu, M., Zanos, T.P., 2020. Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area. *JAMA* 323, 2052–2059.

Rosa, R.G., Tonietto, T.F., Da Silva, D.B., Gutierrez, F.A., Ascoli, A.M., Madeira, L.C., Rutzen, W., Falavigna, M., Robinson, C.C., Salluh, J.I., Cavalcanti, A.B., Azevedo, L. C., Cremonese, R.V., Haack, T.R., Eugenio, C.S., Dornelles, A., Bessel, M., Teles, J.M. M., Skrobik, Y., Teixeira, C., 2017. Effectiveness and safety of an extended ICU visitation model for delirium prevention: a before and after study. *Crit. Care Med.* 45, 1660–1667.

Rose, L., Cook, A., Casey, J., Meyer, J., 2020. Restricted family visiting in intensive care during COVID-19. *Intensive Crit. Care Nurs.* 60, 102896.

Sasangohar, F., Dhala, A., Zheng, F., Ahmadi, N., Kash, B., Masud, F., 2020. Use of telecritical care for family visitation to ICU during the COVID-19 pandemic: an interview study and sentiment analysis. *BMJ Qual. Saf.* 1–7.

Scelsi, S., 2020. Letter to EFCCNA members https://pastsite.aniarti.it/sites/default/files/documenti/covid_19_aniarti_to_efccna.pdf?fbclid=IwAR19p4g0SVAQF-RoGnK9BVgMO0wZkxohwsUHIYImxQzi06JKfysuY5ckqVWVY [Accessed April 21, 2021].

Stilos, K., Moore, J.D., 2020. How COVID-19 has changed the dying experience for acute care patients and their families. *Can. Oncol. Nurs. J.* 30, 218–219.

Valley, T.S., Schutz, A., Nagle, M.T., Miles, L.J., Lipman, K., Ketcham, S.W., Kent, M., Hibbard, C.E., Harlan, E.A., Hauschildt, K., 2020. Changes to visitation policies and communication practices in michigan ICUs during the COVID-19 pandemic. *Am. J. Respir. Crit. Care Med.* 202, 883–885.

Vandall-Walker, V., Clark, A.M., 2011. It starts with access! A grounded theory of family members working to get through critical illness. *J. Fam. Nurs.* 17, 148–181.

WHO. Coronavirus disease (COVID-19) pandemic [Online]. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>. [Accessed May 3 2021].

Zante, B., Camenisch, S.A., Jeitziener, M.M., Jenni-Moser, B., Schefold, J.C., 2020. Fighting a family tragedy: family-centred care in times of the COVID-19 pandemic. *Anaesthesiol. Intensive Ther.* 52, 336–338.