



CRITICAL CARE NURSES' EXPERIENCES OF CARING FOR PATIENTS WITH COVID-19: RESULTS OF A THEMATIC ANALYSIS

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Background The COVID-19 pandemic has challenged health care professionals, especially those working in intensive care units (ICUs).

Objectives To explore critical care nurses' experiences with and perceptions of the COVID-19 pandemic during the early phases of the pandemic.

Methods Data were from national surveys conducted during March and April 2020 to assess ICU providers' perceptions of the initial phases of the pandemic. A total of 831 responses from nurses to open-ended questions were examined by using thematic analysis. The questions assessed potentially limited resources in the ICU, adequacy of staffing, and measures used to reduce the possibility of spreading COVID-19 to family members.

Results Overarching themes concerned access to equipment and preventive measures taken to reduce exposure to the virus. These themes included "sheltering the patient when I don't have enough" and "protecting those I love when I am a vector of transmission." Subthemes for the first overarching theme included not having enough personal protective equipment, not enough staff and not enough properly trained staff, and not enough institutional support. Subthemes for the second overarching theme included "isolating myself from everyone I care about" and "isolating everything I touch from everyone I care about."

Conclusions This thematic analysis identified several concerns of ICU nurses related to caring for patients in the initial phases of the COVID-19 pandemic. Ensuring adequate supplies, staffing, and administrative and emotional support are provided to frontline health care providers during the ongoing pandemic remains essential. (*American Journal of Critical Care*. 2022; 31:275-282.)

The COVID-19 pandemic has placed an unprecedented strain on the US health care system and health care professionals, especially those working in intensive care units (ICUs). In recent publications on the impact of the pandemic on clinicians, researchers have highlighted physical and psychological effects on physicians, nurses, and other frontline providers.¹⁻¹⁵ These reports also highlight the challenges experienced by ICU nurses as a result of caring for critically ill patients with COVID-19, such as physically demanding work, poor patient prognosis, lack of family presence, and moral distress.^{6,7,9}

The ongoing pandemic has compounded the existing nursing shortage.⁵ Because the largest number of health care providers are nurses, and because nurses spend the most time at the bedside, we can gather valuable information for administrators, nursing leaders, educators, and clinicians interested in mitigating impacts on the nursing workforce by identifying the impact of the COVID-19 pandemic on ICU nurses. In this thematic analysis of data from a series of rapid-cycle surveys of a national sample of more than 14 000 ICU clinicians,

we explore the experiences and perceptions of critical care nurses concerning the impact of the COVID-19 pandemic during the early phases of the pandemic.

Impact of the Pandemic on Critical Care Nursing Practice

Although all members of the ICU team are affected by the COVID-19 pandemic, the ability of

critical care nurses to provide patient care and promote family-centered care in the ICU has been especially affected.¹⁶⁻¹⁹ In an effort to collect data on the impact of the pandemic on critical care providers, the Society of Critical Care Medicine, a national organization of more than 16 000 clinicians including physicians, nurses, pharmacists, respiratory therapists, and others, launched a series of rapid-cycle surveys in March through July 2020.^{4,20}

The first survey was launched March 18, 2020, through March 25, 2020, to assess ICU clinicians' perceptions of the degree to which ICU facilities and teams were prepared to treat patients with COVID-19, concerns related to caring for patients with COVID-19 in the ICU, and efforts that had been made to care for such patients.²⁰ The second survey was launched during a 2-week period from April 7, 2020, through April 22, 2020, to assess ICU clinicians' perceptions of the most critical ICU needs in managing the COVID-19 pandemic, challenging aspects of care, level of resources, concerns about being exposed to COVID-19, and level of personal stress.⁴ The third rapid-cycle COVID-19 survey was conducted during a 3-week period in July 2020 and focused on surge capacity, including the availability of critical-care-trained staff to support pandemic response in the ICU, specific ICU staffing modifications implemented to manage the COVID-19 pandemic, and mechanical ventilation and prone-positioning practices.

A study inclusion criterion was that respondents had provided care in the ICU to a patient with confirmed or suspected COVID-19. Each survey included several open-ended questions to further assess clinicians' perceptions, which formed the basis for this thematic analysis.

Collectively, more than 14 000 critical care providers responded to the surveys. These clinicians included ICU nurses (n = 10 480, 72%), physicians (n = 899, 6%), advanced practice providers including nurse practitioners and physician assistants (n = 674, 4.6%), respiratory therapists (n = 437, 3%), and pharmacists (n = 113, 0.8%).

Data from national surveys conducted during the early phase of the COVID-19 pandemic were analyzed using thematic analysis to identify ICU nurses' experiences and perceptions.

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Because the largest number of responses to the open-ended questions were from critical care nurses, our purpose in this thematic analysis was to explore the experiences and perceptions of these nurses concerning the impact of the COVID-19 pandemic.

Methods

More than 900 responses from ICU nurses were received to open-ended questions on the second and third rapid-cycle surveys. The present qualitative analysis used the 6-step thematic analysis described by Braun and Clarke.²¹ Survey participants provided open-ended responses to the following questions: "What do you see as potentially limited resources in your ICU as the COVID-19 pandemic continues?" "What if any special measures have you taken to limit the possibility of spreading COVID-19 to your family members?" and "Please share any additional information related to the pandemic surge."

In our initial review for the thematic analysis, we read the open-ended comments provided by 831 respondents to familiarize ourselves with the data. The first review established common words or phrases frequently observed in the responses for each question.⁴ Using the "sort" function in Microsoft Excel, we first alphabetized the responses to determine additional words or phrases for each open-ended response. Using the "search" feature in Microsoft Excel, we determined and recorded the frequency of the initial words and phrases. Each set of words and phrases was then batched to capture similar verbs used in different tenses (eg, "live alone," "living alone," and "always lived alone"). We again tabulated the frequency of responses and reviewed the list to ensure that there were no duplicate responses from the same respondent.

We collated the open-ended responses by words and phrases. After this phase of the thematic analysis, we discussed the initial words and phrases and themes with a coauthor who had not yet analyzed the data to help ensure credibility. To ensure dependability of these steps, 2 weeks later we repeated the above steps using the raw data in a different file and compared the files for accuracy. After the files were compared for accuracy and consistency, we determined the initial themes. After the initial 2 analyses, we sorted the responses for frequency of response by themes. Documents comprising the audit trail are available on request.

Results

Of the 10 480 nurses (10 201 rapid cycle 2; 279 rapid cycle 3) who participated, 642 and 267 provided

Table 1
Type of hospital and location of intensive care unit nurses responding to rapid-cycle surveys 2 and 3

Rapid-cycle survey 2 (n=642)		No. (%)
Type of hospital		
Community	397	(61.8)
Academic	189	(29.4)
Government	29	(4.5)
Private	25	(3.9)
Location		
Metropolitan (urbanized area with population >50 000)	465	(72.4)
Micropolitan (urbanized area with population 10 000-50 000)	150	(23.4)
Rural (area with population <10 000)	27	(4.2)
Rapid-cycle survey 3 (n=267)		No. (%)
Type of hospital		
Community	179	(67.0)
Academic	74	(27.7)
Government	5	(1.9)
Private	3	(1.1)
Other (eg, county, federal, for-profit)	6	(2.2)
Location		
Metropolitan (urbanized area with population >50 000)	191	(71.5)
Micropolitan (urbanized area with population 10 000-50 000)	63	(23.6)
Rural (area with population <10 000)	13	(4.9)

Table 2
Open-ended questions for thematic analysis and number of valid responses received from intensive care unit nurses

Question	No. of valid responses
"What do you see as potentially limited resources in your ICU as the COVID-19 pandemic continues?"	254
"What if any special measures have you taken to limit the possibility of spreading COVID-19 to your family member?"	459
"Please share any additional information related to the pandemic surge."	94

Abbreviation: ICU, intensive care unit.

responses to the open-ended questions in the rapid-cycle 2 and rapid-cycle 3 surveys, respectively. The majority of respondents were practicing in a community hospital (n = 576, 63.4%) in a metropolitan location (n = 656, 72.2%) (Table 1). Collectively, the open-ended responses from rapid-cycle surveys 2 and 3 formed the basis for the thematic analysis (Table 2).

Major Themes and Subthemes

We identified 2 major themes and 5 subthemes. Regarding access to needed equipment, the overarching theme was "sheltering the patient when I don't have enough," and regarding preventive measures to reduce exposure to loved ones, the overarching theme was "protecting those I love when I am a vector of

transmission.” The data, reflecting a moment in time in the early pandemic, are generally presented from the most to least prevalent themes.

Sheltering the Patient When I Don't Have Enough

Supporting this overarching theme were 3 sub-themes in the early phase of the pandemic: not enough supplies and equipment; not enough staff and not enough properly trained staff; and not enough institutional support.

Not Enough Supplies and Equipment. The most common response to the question regarding access issues was personal protective equipment (PPE), with respondents noting that there was not enough PPE. The next most prevalent category was sanitizing wipes, which were used to ensure that the environment was

kept as clean as possible. Following that was a lack of intravenous tubing, which meant that intravenous pumps had to stay inside patients' rooms, increasing the nurse's exposure. Other supplies that were less available included enteral feeding pumps and bags, inhalation bags for ventilators, high-flow nasal cannulas, certain medications, intravenous pumps,

arterial blood gas syringes, high-efficiency particulate air (HEPA) filters, hand sanitizer, and cleaning supplies; even the most basic supplies were in short supply. Another shortage was patient rooms, particularly negative pressure rooms; other non-ICU floors were transformed to accommodate patients with COVID-19.

Many respondents noted a shortage of continuous renal replacement therapy (CRRT) machines and extracorporeal membrane oxygenation (ECMO) machines; anesthesia and transport ventilators, in addition to bilevel positive airway pressure (BiPAP) machines, were used when standard ventilators were not available. Oxygen and medical air-flow equipment necessary for ventilators were in short supply. Some patient areas lacked enough electrical outlets to accommodate all the machines needed. Respondents noted the need for resources to permit virtual face-to-face moments between critically ill patients and their loved ones, as well as the need for better communication with patients' families.

Not Enough Staff and Not Enough Properly Trained Staff. Overwhelmingly, responses indicated that regular ICU staff needed more trained ICU nurses, but staffing was insufficient, and included nurses who

were not adequately trained. Nurses often had 3 to 4 patients receiving mechanical ventilation, and nurse-to-patient ratios were not realistic. Travel nurses, float pool nurses, agency nurses, and unit nurses from non-ICU floors were used to augment staffing. However, some of these supplemental nurses had no prior ICU experience, which added to the complexity of ensuring appropriate staffing coverage. Some respondents perceived that support from the institutions for which they worked was lacking. Nurses became ill with COVID-19 themselves and could not work, leaving units even more short-staffed. Respondents noted that it was hard to answer phone calls from anxious family members.

Respondents felt that the burden of COVID-19 fell primarily on the nurses, who were emotionally and physically exhausted. The stress of watching so many patients die took an enormous toll on nurses. As one nurse said,

I tried to remain strong, while crying through the most of my shift. Thanks to the mask you could only see my red eyes which I would attribute to lack of sleep. But I cried not because I had no clue what I was doing. I wept because these patients talk to me in hopes of saving them just before they get intubated. I hold their hands and ask them to be strong, knowing well that their chances may be minimal.

Protecting Those I Love When I Am a Vector of Transmission

Supporting this overarching theme were 2 sub-themes: isolating myself from everyone I care about and isolating everything I touch from everyone I care about.

Isolating Myself From Everyone I Care About.

When asked about preventive measures used to reduce family exposure, the most common response was that the respondent lived alone. Many of those who stated they lived alone also explicitly noted that they were not visiting friends and family. Others who had not previously lived alone were doing so now, often in hotels, to distance themselves socially from those they resided with before the pandemic. Several respondents were on travel nursing contracts that allowed them to isolate away from family, and some had explicitly taken travel assignments to reduce exposure to their families. For the most part, it was the nurse who indicated that they had left their home to isolate elsewhere, but in a few cases, nurses noted that family members, particularly children, had left

Overarching themes concerned access to equipment and preventive measures taken to reduce exposure to the virus.

the home to stay with relatives or the other parent while the nurse stayed in the home.

For those nurses who could not or chose not to live alone, many put in place measures to isolate themselves within the household at least to some extent, including sleeping in a separate bedroom from their partners, wearing a mask at home, refraining from kissing or hugging, staying in a different room when at home, and limiting anyone from outside the household from entering the home. They used social media and technology to stay in touch with loved ones.

A few people put time frames on their isolation. Several noted that they had informed their families that they would not see them in person until the pandemic was over or “better controlled.” Several nurses lamented “the nature of the virus and the lack of testing” and indicated that they hoped testing or additional information about transmission might eventually let them see family members safely.

One nurse noted that they would leave their home “once surge levels start . . . and remaining removed from my family until peak admissions subside and levels are pre-surge (plus 2 weeks),” and another noted that their spouse was compromised and thus was “living with her parents until I stop taking care of COVID-19 patient[s].”

Several people clearly stated the hardship this isolation brought. One nurse said, “I moved out of my mother’s house and then into my sister’s house, and finally ended up leasing my own apartment, and now have more of a financial burden with all of my extra bills including my mother’s. I don’t see anyone in my family at all.” Another said,

I am a 57-year-old diabetic and my husband has stage 4 COPD [chronic obstructive pulmonary disease]. I worry that I will be infected and he will as well. I live in the granny flat now and we communicate by FaceTime. He is a 70-year-old Purple Heart Vietnam veteran that now lives alone when he needs me the most!

Even when living arrangements were not impacted, many nurses noted that they could not see or help other family members, particularly older parents, in other households.

Despite these stresses, those isolating themselves did acknowledge some coping mechanisms and external support. Several people noted that friends and neighbors brought food. One nurse mentioned

that while they were carefully socially isolating, they continued to run outside on their days off and another mentioned group workouts on the Zoom videoconferencing platform (Zoom Video Communications). Although a few people mentioned socially distanced visiting (eg, from the driveway) to maintain some social interaction, most specified that they were seeing friends and family members virtually only.

Isolating Everything I Touch From Everyone I Care About. Regardless of whether someone was living alone or otherwise isolating, many nurses took extensive measures to avoid bringing the coronavirus into the home. This ranged from heightened adherence to standard measures such as handwashing and showering and changing clothes after work to the development of elaborate postwork hygiene rituals.

Many people noted that anything they took into the hospital did not come into the home. For some, this simply meant leaving work shoes or bags outside the door to the house or in the car at home. Others created “changing stations” outside the home’s entry (eg, in a garage) where clothes and shoes were removed. Some people mentioned beginning to limit the personal belongings they took to work, such as lunch bags, or keeping things such as cell phones in plastic bags while at work.

Once in the home, many respondents placed work clothing into the washing machine and then immediately showered, limiting physical contact with people and objects until these tasks were complete. Work-provided scrubs were mentioned appreciatively several times because scrubs made it easier to manage contaminated clothing and prevent it from entering the home. Although many nurses immediately washed work clothes, several mentioned leaving work clothing in plastic bins or bags for several days before washing. The use of sanitizing settings on the washer and dryer, hot water and/or bleach, and double washing were all mentioned as practices for washing work clothes and towels.

Disinfection was commonly done, even for things that never entered the household. Shoes were the most commonly mentioned item disinfected, but phones, keys, pens, badges, and eyeglasses were all also mentioned. Cars driven to and from work were also regularly disinfected, and some respondents

Subthemes included not having enough personal protective equipment, not enough staff and not enough properly trained staff, not enough institutional support, and isolating.

Ensuring adequate supplies, staffing, and administrative and emotional support are provided to frontline health care providers during the ongoing pandemic remains essential.

also placed towels on car seats then washed and bleached those towels. Several nurses noted that they had “quarantine cars” that only they drove to and from work. Surfaces in the home that were touched between the entrance to the home and the shower and washing machine, particularly door-knobs, were mostly commonly disinfected, but several nurses introduced frequent routine disinfection of surfaces throughout the home. Some introduced new measures, such as an air purifier intended to decontaminate space at home.

A typical routine was described by one nurse as follows: “I park in the garage and remove my clothes and shoes. My shoes stay in the garage. I put my clothes in a towel that gets thrown in the washer immediately when I come inside. I immediately shower. My cell phone is in a Ziploc bag before I go to work until I

come home. My purse doesn’t go into the building with me.” Another described her routine as “vigorous decontamination with bleach post-shower, double washing and disinfecting scrubs, bleaching walked paths, minimizing items brought to work and bleaching before they reenter house.” Although it was clear from the descriptions that the containment measures were time-consuming, only one

person gave an actual estimate of the additional time these measures were taking, stating that their “complete decontamination of car and shoes . . . add[s] an extra 2 hours to my workday.”

Discussion

This study reports on ICU nurses’ experiences and perceptions in the early phase of the pandemic related to institutional resource preparedness and measures taken to prevent or limit the possible spread of COVID-19 to family members. Preliminary themes regarding the question of resources primarily focused on access. Subthemes were related to supplies, personnel, training, and support. The nurses’ responses to the questions about access to needed equipment and the preventive measures used to reduce exposure of loved ones to the virus mirror other reports in social media, news sources, and the literature.^{5-8,11,13,15,16,20,22}

The major theme of isolation was further divided into isolation practices, living alone or separately,

changing clothes and shoes, decontaminating self or supplies, self-quarantine, and virtual interaction only. Intensive care nurses reported concerns related to supplies (PPE and supplies for cleaning and disinfecting), personnel, training, and support (including leadership support or perceived lack thereof). Our findings are similar to others that have been published. In one study, investigators reported a strong association between perceived access to PPE and provider distress.¹¹ In a series of surveys conducted by the American Nurses Association among 32 000 nurses, more than one-half of the respondents reported PPE shortages and staffing concerns.²³

Themes regarding the question of measures taken to protect family members centered on self-isolation and barrier practices. These major themes of barrier practices were separated into PPE; changing of clothing, scrubs, or shoes; and additional sanitation practices.

Nurses reported several measures they had instituted to reduce the exposure of their family members, including altering living arrangements by living alone or taking measures to isolate. The respondents described various practices used to mitigate the potential transmission of the virus to family members, such as changing clothes at or after work, showering before seeing family members, limiting physical contact, limiting contact with family members or friends, and interacting via technology only. Findings were similar in the American Nurses Association survey and in surveys conducted by the International Council of Nurses, in which nurses reported concerns about the potential for virus transmission for themselves and for their family members.^{23,24}

Respondents also reported on the emotional toll of the ongoing pandemic. The physical and mental exhaustion reported by some of the ICU nurses in this study are of concern, especially because some nurses attributed feelings of being overwhelmed to the ongoing high levels of stress. Although nurses were initially celebrated as health care heroes, they also reported that they faced isolation. The importance of addressing the psychological impact of the pandemic on health care providers continues to be highlighted in the literature.^{1-2,12,13,16} A recent international study of 2700 ICU health care providers from 70 countries identified that nurses were more likely than responding physicians, pharmacists, or respiratory therapists to report emotional distress and burnout related to providing care during the pandemic.¹³ The impact of the pandemic on ICU nurses was recently highlighted in a photojournalism story that depicted the moral

distress nurses have experienced while caring for patients with COVID-19.²⁵ Providing ongoing psychological support and targeted interventions to support ICU nurses on the front lines remains a priority during the continuing pandemic.

Several responses highlighted the importance of leadership support. The vital role that nurse leaders play in maintaining a healthy work environment and in providing support during times of crisis continues to be reinforced in the literature and in pandemic-related resources, including an ongoing podcast series by the American Association of Critical-Care Nurses.²⁶

Limitations

Limitations of this study include that the results reflect only a moment in time at the beginning of the pandemic and not the ongoing experiences of ICU nurses or the continued burdens imposed by the pandemic. Limited demographic data captured by the national surveys do not allow analysis of the data according to the nurse respondents' ICU experiences, education, or geographic location. Because of the overall low response rate to the open-ended questions, the findings may not be generalizable to all settings. Although we followed the recommended method of conducting a thematic analysis, the potential for inconsistency when developing themes derived from data may exist.²⁷

Conclusions

In this thematic analysis, we identified several concerns of ICU nurses related to caring for patients in the initial phases of the COVID-19 pandemic, including supplies, adequate staffing, and virus exposure. Ensuring adequate supplies, staffing, leadership support, and emotional support to frontline health care providers during the ongoing pandemic remains essential.

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FINANCIAL DISCLOSURES

None reported.

SEE ALSO

For more about caring for COVID patients, visit the *Critical Care Nurse* website, www.ccnonline.org, and read the article by Reese et al, "Innovative Partnership Between Intensive Care Unit Nurses and Therapists to Care for Patients With COVID-19" (February 2022).

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