Nurse Media Journal of Nursing
e-ISSN: 2406-8799, p-ISSN: 2087-7811
https://medianers.undip.ac.id
12(2):233-248, August 2022
https://doi.org/10.14710/nmjn.v12i2.46250

ORIGINAL RESEARCH

The Challenges of Intensive Care Unit Nurses Caring for COVID-19 Patients in Indonesia: A Qualitative Study

Fitri Mailani[1], Rahmi Muthia[1], Emil Huriani[1], Boby Febri Krisdianto[1], Elvi Oktarina[1]

[1]*Faculty of Nursing, Universitas Andalas, Padang, Indonesia*

Article Info

Article History:
Received: 18 May 2022
Revised: 20 August 2022
Accepted: 22 August 2022
Online: 31 August 2022

Keywords:
Challenges; COVID-19; intensive care; nurses; qualitative study

Corresponding Author:
Fitri Mailani
Faculty of Nursing, Universitas Andalas, Padang, Indonesia
Email:
fitrimailani22@nrs.unand.ac.id

Abstract

Background: After one year of the pandemic, Indonesia experienced a crisis where the addition of COVID-19 cases increased significantly in several big cities; it made the healthcare system collapse, including the intensive care unit (ICU) service for COVID-19. ICU nurses, who are at the frontline of fighting against COVID-19 and defusing this crisis, are faced with various challenges in providing care for COVID-19 patients, and exploring such challenges are significant.
Purpose: This study aimed to explore the challenges experienced by Indonesian nurses who work in the ICU caring for COVID-19 patients.
Methods: A multi-centered-qualitative study with a descriptive phenomenological design was used. Twenty nurses working in the ICU of COVID-19 in eight COVID-19 referral hospitals in seven major cities in Indonesia were recruited using purposive sampling. Semi-structured individual video call interviews were conducted to collect the data from July-September 2021. Data were analyzed using Colaizzi's (1978) method.
Results: The nurses reported the challenges throughout caring for COVID-19 patients in ICU, which are described in four major themes: (a) working under pressure and moral distress, (b) choosing to do the best, (c) adaptation, learning, and research, and (e) survive physically and mentally healthy.
Conclusion: This study describes the challenges experienced by nurses working in ICUs during the COVID-19 crisis, such as working under pressure, facing dilemmas caring for patients, and trying to survive working in inadequate professional conditions. An in-depth understanding of these challenges in the current pandemic can help managers in the hospital to provide psychological support, adequate training for ICU nurses, and high-quality protocols for upcoming emergency scenarios, as well as maximizing resource management (human and material).

How to cite: Mailani, F., Muthia, R., Huriani, E., Krisdianto, B. F., & Oktarina, E. (2022). The challenges of intensive care unit nurses caring for COVID-19 patients in Indonesia: A qualitative study. *Nurse Media Journal of Nursing, 12*(2), 233-248. https://doi.org/10.14710/nmjn.v12i2.46250

1. Introduction

The COVID-19 epidemic is increasing rapidly worldwide, with 224 countries affected until 24 January 2022 (Worldometer, 2021). The World Health Organization officially declared that the prevalence of COVID-19 has reached a global pandemic phase. The cumulative number of confirmed cases reported globally is now over 350 million (World Health Organization, 2021). Indonesia is the 14th country with the most Coronavirus cases globally by 25 October 2021, with 4,240,019 cases confirmed, and the number of deaths was 143,205. Indonesia's total COVID-19 deaths are still in the 2nd highest rank in Asia (Worldometer, 2021).

In July 2021, Indonesia experienced a crisis where the addition of COVID-19 cases increased very significantly in several big cities. In one day, the addition of patient cases was up to 56,757 points, and the daily death rate was up to 2,069 people (Worldometer, 2021). However, over one year into the COVID-19 pandemic, cases continued to fluctuate. Although the Indonesian government has established several policies which are based on the four crucial components of surge capacity: staff, stuff, structure, and system, currently available medical staffs are insufficient to deal with potentially increasing demands as the pandemic highlighted the human resources challenges that the healthcare system has been struggling with. Surges in patients requiring hospitalization have led to depleted medical supplies. The existing healthcare infrastructure is still inadequate to deal with the rise of COVID-19 cases (Mahendradhata et al., 2021). The most crowded island of Java (56.1% of the country's population) has the highest caseload, with all six

provinces in the island making up around 66.1% of the national tally (Ministry of Health Republic of Indonesia, 2021).

In response to the growing number of COVID-19 cases and to prevent the healthcare system from collapsing, several reorganization interventions have been implemented quickly. The number of ICU beds has been increased, elective surgical procedures have been canceled, and new units have been established, while other units have been converted for COVID-19 patients. (Lipsitch et al., 2020; Mari et al., 2020). As a result, entire nurse groups have had to be relocated to new units (Bagnasco et al., 2020).

At the beginning of the pandemic, Indonesia only had 1,910 ICUs with 7,094 critical care beds, which translates to about 2.7 critical care beds per 100,000 population (Phua et al., 2020), significantly lower than neighboring countries such as Malaysia (3.4 per 100,000 population), Thailand (10.4 per 100,000 population), and Singapore (11.4 per 100,000 populations) (Phua et al., 2020). Lack of adequate facilities for treating COVID-19 cases, particularly negative pressure wards and ICU rooms, especially outside Java, has been reported (Yunus & Andarini, 2020). Therefore, a referral hospital for COVID-19 treatment opened a new sub-unit in the ICU specifically to treat COVID-19 patients. According to a report by the International Council of Nurses, during the first wave of the COVID-19 pandemic response, health care systems focused instead on increasing the capacity and potential of intensive care units (ICUs), which resulted in increased intensive care provider working hours and the use of various rotating-shift patterns (International Council of Nurses, 2020).

During this pandemic, the ICU room has become a room with strict isolation. Nurses are at the forefront of caring for infected patients. Therefore special skills are needed in caring for infected patients in critical condition (Eghbali et al., 2020). The care of critically ill patients due to COVID-19 infection is very complex. Many things must be considered, starting from the limited information regarding specific treatment and appropriate nursing interventions, which are still limited from experience (Guo et al., 2020). In addition, care for critically ill patients infected with COVID 19 requires special attention such as expertise, knowledge, skills, attitudes, and the availability of infrastructure, both equipment and medical staff from hospitals. The lack of medical facilities and staff creates confusion in providing care to patients. This is due to the unpredictable disease prognosis, social isolation, and high virus transmission rates, making it a significant challenge for all countries to provide quality care (Qiu et al., 2020).

Nurses in the ICU play a role in assessing patients, minimizing complications by closely monitoring patients, carrying out airway management, changing positions, conducting education, and collaborating in drug administration (Mehta et al.,2020). Nurses also assist in meeting daily needs such as providing fluids and nutrition, meeting the needs of elimination and personal hygiene, conducting patient assessments and screening, emergency actions, and collaborating with other health teams in the care of critically ill patients (Liu, Luo al., 2020). Nurses face serious risks that can even cause death in caring for COVID-19 patients. The high morbidity and demand for care in the ICU, while the medical team and the unbalanced ratio of nurses and patients, coupled with limited hospital capacity, increase nurses' stress levels (Schwartzet al., 2020).

Guidance for health workers to understand the family's position and provide care to patients by involving and based on family choices is also a challenge. Nurses are asked to understand the family stress caused by their loved ones diagnosed with COVID-19 and experiencing a critical phase. Nurses must be the solution between family anxiety and the risk of their exposure to COVID-19. Nurses meet family needs such as communication, provide ongoing information amidst visitation restrictions, and anticipate family suffering and grieving, so that all add to the list to do (Chen et al., 2021). Internationally, nurses are experiencing fear, anxiety, stress, physical exhaustion, and feeling powerless to handle patients' conditions (Lai et al., 2020; Schroeder et al., 2020; Sun et al., 2020).

ICU nurses are experiencing intense psychological and physical effects as a result of caring for patients diagnosed with COVID-19 in a challenging care environment (Gordon et al., 2021). Providing health care by intensive care nursing professionals, during the COVID-19 pandemic, has shown both strong and weak points in the health care system. Nursing care has been influenced by fear and isolation, making it hard to maintain the humanization of the health care (Fernández-Castillo et al., 2021). Although one year faces the pandemic, the situation is still unstable; new cases were increasing dramatically in several cities, which has an impact on the ICU nurses, who are at the frontline of fighting against COVID-19. They faced various challenges

throughout providing care for COVID-19 patients that have not been revealed. Exploring such challenges is significant. Therefore, this study aimed to explore the challenges experienced by Indonesian nurses who work in the ICU caring for COVID-19 patients.

2. Methods

2.1 Research design

In this study, a descriptive qualitative phenomenological approach (Colaizzi, 1978) was used to explore the challenges experienced by ICU nurses in taking care of patients with COVID-19 in Indonesia. Qualitative research can improve understanding of nurses' experiences of life, procedures, processes, and events as they are observed in the natural environment without intervention. To do so, one must immerse themselves in the real world, engage in personal interactions with nurses, and learn from their experiences (Creswell & Poth., 2016). This approach seeks to enter into a person's experience as a whole, describes the structure of his experience, and aims to capture the main themes and meanings of the person about his experience so that in-depth information is obtained about the phenomenon (Creswell & Poth 2016).

2.2 Setting and participants

A total of 20 nurses working in ICUs of COVID-19 in eight COVID-19 referral hospitals in seven major cities in Indonesia (Jakarta, Bandung, Padang, Kalimantan, Surabaya, Medan, and Jogjakarta) were recruited using purposive sampling. The inclusion criteria were the followings: (1) ICU nurses with at least one year of critical care experience, (2) having experience of caring for COVID-19 patients for at least one month, and (3) expressing willingness to participate in the study and share their experiences. Research permission was obtained from the hospital director where the researchers conducted the study. The hospital's nurse manager provided the researchers with information on the nurses' names who met the inclusion criteria. The first author asked for help from a nurse manager to search for potential participants by contacting them over WhatsApp and outlining the study's goals. The exclusion criteria included nurses who were in isolation due to COVID-19 infection.

2.3 Data collection

Data were collected using semi-structured face-to-face online interviews using zoom meetings by the first and second researchers. Interview guidelines were developed by the researchers and nursing experts in qualitative studies. The study was conducted from July to September 2021. Participants were asked to describe their experiences concerning the survey's central questions, such as "Please, describe your experience working in ICU during the pandemic caused by COVID-19" and "What were the challenges you experienced as an ICU nurse in caring for COVID-19 patients". The interviewer then went on to ask more probing questions like "What do you mean?", "Please clarify", and "Could you be more explicit?" to probe deeper into their more profound experiences.

All interviews were done following the principles of personal protection. The researcher made every effort to respect participants' privacy and provide them with the most significant level of comfort possible. The researcher taped all dialogues during the interviews with the consent of the participants. Each participant was interviewed once, and each interview lasted 30–60 minutes. Interviews continued until the data was exhausted. It is worth noting that data saturation was achieved with only 20 nurses.

2.4 Data analysis

As this was a descriptive phenomenological study, data were analyzed using Colaizzi's (1978) method. This rigorous and robust method ensures the credibility and reliability of the results obtained. It allows researchers to identify emergent themes and their relationships. Furthermore, this method is straightforward and logical and can reveal the structure of the experience under study (Colaizzi, 1978). Two researchers (FM & RM) independently reviewed and transcribed the audio recordings to text immediately after the complete interview. To gain a sense of participants' descriptions of the challenges of their experience taking care of patients with COVID-19 in ICU, the authors read the transcribed data in detail several times to obtain nurses' perceptions of the challenges in taking care of patients with COVID-19 in the ICU. The researchers (FM & RM) analyzed the transcript manually and coded significant words, statements, or phrases related to

the nursing experiences. A color-coded system was used to highlight substantial statements to perform the preliminary analysis. Then, the two authors organized the significant statements into meaningful units that clustered the categorizing codes into themes and integrated the obtained themes related to the nurse's experiences into an in-depth description of the challenges experienced phenomenon. After the themes were extracted, a discussion session with all authors was held to reach a consensus on the extracted themes. We analyzed the data simultaneously with the data collection. The themes were presented to five participants to ensure accuracy compared to their statements on their own experiences. The participants reported the findings to be true and that the conclusions represented an accurate reflection of their experiences.

2.5 Trustworthiness/rigor

Trustworthiness can be obtained by utilizing the criteria of credibility, transferability or fittingness, and consistency or dependability (Lincoln & Guba 1985). To determine the acceptability of the data gathered from participants, the interview findings were sent by email to all participants in the form of transcripts. Member checking was also done to validate the results, as it is the most critical technique to establish credibility and allow participants to reflect on experiences (Mays & Pope, 2020). The dependability of this study was maintained by involving an expert in qualitative research to audit and analyze a series of research processes. Confirmability was done by debriefing the study results with the research team to ensure no bias in analyzing and developing the themes. All researchers agreed with all findings. Finally, the researchers tested transferability by summarizing the study's findings and providing a narrative explanation of the interview results. It was done so that the readers could clearly understand the results of the research and could use and apply the results of the study elsewhere.

2.6 Ethical consideration

This study received approval from the Health Research Ethics Committee of Dr. M. Djamil Hospital, Padang, Indonesia, with a reference number of 219/KEPK/2021. The researchers introduced themselves to the participants, discussed the study's goals and procedures, received signed informed consent, and assured them that their personal information would be kept private.

3. Results

3.1 Profile of participants

Data saturation was reached after interviewing 20 participants. Most of them were 26-45 years old (95%), female (60%), married (80%), and had bachelor's degree (55%), 1-3 years experience in ICU (60%), and >6 months work in ICU for COVID-19 (60%). The characteristics of participants are listed in Table 1.

Table 1. Demographic characteristics of the study participants

Characteristics	f	%
Age (years)		
26-45	19	95
46-60	1	5
Gender		
Male	8	40
Female	12	60
Education		
Diploma's degree	6	30
Bachelor's degree	11	55
Master's degree	3	15
Marital Status		
Married	16	80
Single	4	20
Intensive care experience		
1-3 years	12	60
>3 years	8	40

The data analysis identified four main themes: (a) working under pressure and moral distress, (b) choosing to do the best, (c) adaptation, learning, and research, and (e) survive physically and mentally healthy. The themes and sub-themes are presented in Table 2.

Tabel 2. Themes, subthemes, and codes obtained from data analysis

Coding	Sub-theme	Theme
Stress gained from pandemic Worry about transmitting the disease to family Fear of getting infected COVID 19 Grieving/sad to see the patient's condition Stress every day caring for the corpse Separated from family Stress caring for the family of officials/leaders Anxiety Caring for colleagues Many ICU nurses have been confirmed positive for COVID	Psychological suffering	Working under pressure and moral distress
We are feeling burnout at work. The nurse-patient ratio is not ideal. Full bed every day Can not refuse patients/ disaster situation slackening "time off"/ vacation time Difficulty adjusting prone position	Physical exhaustion	
Overheated when wearing personal protective equipment Dyspnoea Inability to use the bathroom when wearing personal protective clothes/ hazmat Reduced ability when working with personal protective gear Skin allergies when wearing personal protective clothes Difficulty eating/drinking when wearing personal protective gear	Exhausting using Personal Protective Equipment	
Unpredictable condition fighting for overcomes the difficulty in breathing New variant COVID-19 There is no progress in the cure rate/the death rate increases. Bad prognosis Patients have Happy hypoxia.	Unclear prognosis of diseases	
The family does not accept the patient's condition. Family doesn't believe in COVID 19 The family is not willing to hold the corpse of the COVID 19 protocol. Receiving threats from the patients' family	Uncooperative patients family	
Sense of caring increases Although not recommended, still perform CPR to save the patient's life.	Humanity	Choose to do the best
Reduce CPR Suction as needed Bed-making is not every day. Lowering the quality of action to achieve quantity Unable to accompany a patient who dies	Choose priority interventions and reduce routine activities.	
Take a shower after leaving the room. Longer working hours Red/green zone work area division Division of working hours in shifts Preparation of all drugs in the green zone Optimizing communication using telephone/video calls Observation via cctv/ nurse call	Changes in work patterns/work routines	Adaptation, learning, and research
Co-workers have no experience in intensive care. Train new nurses/volunteers Increasing number of patients in the ICU Increasing number nurses infected COVID-19	Increase workload	

Tabel 2. Continued

Coding	Sub-theme	Theme
Learn new treatment and nursing care for COVID-19 patients (ECMO, CRRT, Prone position) Learn new knowledge about the treatment and care of COVID-19 patients	Learn/Upgrade knowledge about COVID 19	
Evaluating some of the interventions carried out in overcoming shortness of breath Engaged in several medical/health research	Research	
Maintain physical condition Eat healthy food and vitamins. Routine SWAB	Nurse preventive efforts	Survive physically and mentally healthy
Pray for health	Pray	

3.2 Theme 1: Working under pressure and moral distress

All the participants reported they were working under pressure and in moral distress. The nurses who work in ICU for COVID 19 stated that they were tired and feeling burnout. This theme consists of five sub-themes, namely psychological suffering, physical exhaustion, exhausting using personal protective equipment, unclear prognosis of diseases, uncooperative patient's family.

3.2.1 Psychological suffering

According to data analysis, stress gained of a pandemic, worry of transmitting the disease to family, fear of getting infected COVID 19, grieving/sad to see the patient's condition, stress every day is caring for the corpse, separated from family, stress caring for the family of officials/leaders, anxiety caring for colleagues, and many ICU nurses have been confirmed positive for COVID 19 indicated psychological suffering.

Most participants reported stress, sad, and tired; for example, participants said, *I'm worried that if I get infected, and later it will also pass on to my family at home; therefore I choose to live apart for a while. (P5); I feel stressed and tired; I think about when I work without wearing a hazmat; I'm tired, physically and mentally stressed. I talk to friends, and they also feel what I feel. (P16).* Likewise, (P7) reported: *The saddest thing is when I take care of my colleagues, I worry if something terrible will happen. I want to give the best care so that they get well., I worry if something terrible will happen. I want to give the best care so that they get well. (P7)*

3.2.2 Physical exhaustion

Participants stated that they were feeling burnout at work. The nurse-patient ratio is not ideal. In addition, nurses also stated that they were physically exhausted due to the state of the ICU bed being full every day, unable to refuse patients/disaster situations, reduced rest/vacation time, and difficulty adjusting to the prone position.

Most of participants explained: *At the pandemic's peak, the challenge is that the nurse-to-patient ratio is not ideal, but this is a disaster; we can't refuse patients, so we accept patients regardless of the patient's condition, I feel exhousted. (P18).* Most participants reported that almost every day the bed in ICU is full, especially from Mei to July: *Beds are always full; new patients come and die right away. It's crowded. (P6).* Another participant also reported: *When many ICU nurses are also infected, the workload is increasing, we can't even ask for off on duty. (P9)* Some nurses reported that difficulties to adjusting prone position: *Most of us who work in the ICU is a woman, so when we want to adjust the prone position, it is difficult for us, coupled with the many devices attached to the patient's body, it is tiring. (P12)*

3.2.3 Exhausting using personal protective equipment

Data analysis showed that most participants feel overheated when wearing protective clothes (hazmat suit), dyspnoea, inability to use the bathroom when wearing personal, protective clothes/ hazmat suit, reduced ability when working with personal protective gear, skin allergies when wearing personal protective clothes, difficulty eating/drinking when wearing personal protective gear.

The following are some of the statements stated by the participants: *The difference in routine has happened; we are in the red zone, we can't take our hazmat off for 8 hours, so we can't eat, we can't drink, we can't pee, we endure all that. (P4)* Another participant also reported: *At first, my skin was itchy because of allergies to material from protective clothes; maybe it happened because of the extreme heat, I was itchy, and my skin was red. (P15)*

In addition, some nurses also complained about limited mobility when using self-protection equipment: *It will be more difficult to use full personal protective equipment (PPE) to act. I feel like our movements are limited. Sometimes when I use goggles (medical glasses), I sweat, so it becomes dewy. (P16)*

3.2.4 Unclear prognosis of diseases

The participants said that the prognosis of the disease was unclear and looked different for each patient. This is a challenge for nurses in providing nursing care. The participants stated that unclear prognosis of COVID-19 due to unpredictable patients' conditions, nurses have to fight to overcome the difficulty of breathing, the appearance of new variant COVID-19, and there is no progress in the cure rate/the death rate increases.

Participant 13 stated: *The patient's condition is unpredictable; they look fine, but when I check, the saturation is 80%; this is called Happy hypoxia. (P13).* Some nurses said that COVID-19 patients who have been put on ventilators have very little chance of recovery; this is a big question for them. One of the participant stated: *I am confused; there is a big question regarding patients infected with COVID 19 attached to ventilators. Most of them do not survive, and the recovery rate of patients on ventilators is very low. (P17).* Currently, many new variants of COVID-19 have emerged, making nurses confused. A nurse said:

> *COVID-19 is a new disease for us, and now new variants are also emerging, so we are faced with something that we do not know for sure what the treatment will be; this makes us curious about the prognosis of patients with this disease is unclear and unpredictable, This condition is rarely encountered in a regular ICU. (P18)*

3.2.5 Uncooperative patients family

One of the challenges faced by nurses in the COVID-19 ICU is providing understanding to the patient's family regarding the nursing care provided. Some of the patients' families do not believe in the COVID-19 virus and are not cooperative during the nursing process. Some nurses stated that the family does not accept the patient's condition; the family does not believe in COVID 19. The family is not willing to hold the corpse of the COVID-19 protocol, receiving threats from the patients' family. P1 reported the following:

> *Many people have not received that his family was diagnosed with COVID- 19. The patient's family sometimes made a problem in the hospital; there was a family of patients asking to take care patient at home, and there were even families of patients who tried to bring the bodies of patients with Covid 19 because they were not willing if their families were buried with COVID-19 Protocol. (P1)*

Another participant also stated: *Another challenge is from a family of patients who reject their families being knocked out with Covid 19 protocols; hospitals must call the police to help secure the condition. (P18)*

3.3 Theme 2: Choose to do the best

This theme consists of two sub-themes: humanity and choosing priority interventions and reducing routine activities.

3.3.1 Humanity

In a crowded situation where the nurse-patient ratio is not ideal, the nurses said they were still trying to do the best for the patient. For example, since the pandemic, performing CPR in ICU for COVID-19 was not recommended, even though, nurses still perform CPR to save the patient's life due to a sense of caring. A participant said: *Although COVID-19 patients in the ICU should*

not be given CPR based on guidelines, we continue to carry out CPR because of a sense of humanity. (P16)

3.3.2 Choose priority interventions and reduce routine activities

When the ICU room for COVID-19 is full every day and many ICU nurses are infected with the disease, nurses must sort out priority interventions that must be given to patients, such as reducing CPR, performing suction as needed, lowering the quality of intervention to achieve quantity, and being unable to accompany a patient who dies.

A participant stated: *I did suction as needed because this action is at risk of the spread of COVID-19 via airbone, so we have to be vigilant. (P16).* Another participant also stated:

> *In situations where the Covid 19 case peaked, we must know when we should provide service to the maximum level and when we provide optimal services; we discuss it like this, if we prioritize the quality of service with that number of patients, it doesn't seem possible. We must reduce service standards, finally the action that does not affect the treatment and care of the patient, the frequency we subtract, for example, we do not make the bed every day. (P18)*

3.4 Theme 3: Adaptation, learning and research

This theme consists of four sub-themes: changes in work patterns/work routines, increase workload, learn/upgrade knowledge about COVID 19 and doing research.

3.4.1 Changes in work patterns/work routines

For efficiency in ICU, the nurse management made a policy to change the pattern of working hours and divide working hours into shifts and nurse's work areas into red and green zones. Nurses shower after leaving the room, divide working hours into shifts, prepare all drugs in the green zone, change communication patterns, increase workload, and learn/upgrade knowledge about COVID-19. All nurses said their work patterns changed and were modified according to management policy, as indicated by the following participant' statement:

> *In the COVID-19 ICU work pattern, we modified in one shift and were divided into two teams. The first team initially entered the room four hours; after the first team came out, the second team entered. The difficulty was when the patient was a lot. At the same time, the nurse worked in (red zone) a little because it was divided into two, so it is pressed, especially if the patient's condition is unstable. (P1)*

> *In ICU for COVID-19, we maximize communication using telephone and video calls. We do handover in the morning, we read all the follow-up plans and checks that have been done, inside (red zone) we also handover again, if we don't understand or miss about planning for today we can confirm via telephone. (P4)*

3.4.2 Increase workload

The participants reported that the workload increased in line with significantly rising number of COVID-19 cases in Indonesia. Increased work in the ICU is caused by COVID-19 patients who require intensive care, such as respiratory failure, kidney failure, decreased consciousness, and other complications. The increasing number of ICU nurses infected with the COVID-19 has added to the nurse's workload in the room. The increase in the number of nurses in the ICU who are fresh graduate nurses and do not have experience does not help much work in the ICU. Some participants reported:

> *The situation is very congested; the workload has increased due to many waiting lists for patients in the ICU; besides that, many nurses in the room must self-isolate because they are infected with COVID-19 and cannot work. (P17)*

> *Nurses who work in the ICU have diverse experience backgrounds; most of the volunteers are fresh graduates and do not have work experience, so it becomes a challenge to guide and teach them, sometimes I feel it adds to the burden just my job. (P19)*

3.4.3 Learning/upgrade knowledge about COVID-19

Besides the negative effects of the pandemic, all participants also reported increased knowledge and skill during taking care of COVID-19 patients in ICU. The participants stated:

> *During this pandemic, I learned a lot of new things related to the treatment of COVID-19 patients, staff arrangements in the ICU, and managed the equipment in the intensive unit. In addition, I also have to motivate the nurses in the ICU to always be enthusiastic about fighting this virus. (P2)*

Another participant (P11) also stated: *I have to learn continuously as the development of COVID-19 treatment continues to grow; this is a new challenge for me. As a nurse, my knowledge and skills have also increased (P11).* Similarly, P3 expressed: *I had the opportunity to study and do ECMO (Extra Corporeal Membrane Oxygenator), CRRT (Continue replacement renal therapy) it was very challenging (P3).*

3.4.4 Research

Some participants said that caring for patients with COVID-19 is like conducting research. Everyday, nurses evaluate some interventions to reduce the symptoms, for example, nurses tried to evaluate some interventions to overcome shortness of breath and engaged in some medical/ health research. A participant stated:

> *I'm excited, since the COVID-19 ICU was opened, our knowledge has increased, our skills have improved, so it's like research because covid 19 is new, so we are like research every day with the patient's condition, how do patients respond to an intervention? Can we do this intervention? If the patient's situation is different, we try other interventions, so it's like research because there is no clear and definite procedure for handling the condition of covid 19 patients. Nurses and doctors cooperate in providing interventions. (P1)*

3.5 Theme 4: Survive physically and mentally healthy

This theme reveals participants' challenges to survive physically and mentally healthy against the pandemic. Participants who work in ICU for COVID-19 stated that they have preventive efforts and pray.

3.5.1 Nurse preventive efforts

Data analysis showed that one of the crucial needs of nurses in taking care of COVID-19 patients was paying attention to their nutritional needs. Nurses revealed that they try to maintain health by consuming healthy foods, vitamins, and regular swab test. One participant stated:

> *The challenge now is how do we keep our physical condition healthy; we have to work with protective wear, it's hard, we have to keep our immune strong, especially with full patients every day, we have a lot of work, we can't sit in the room, that's the real challenge. Beside that, our challenge is to see the patient's condition, sometimes we take care of our co-workers, it becomes stressful too, it feels like just waiting for our turn. (P16)*

3.5.2 Pray

Nurses always prayed that the pandemic will end soon and the situation will return to normal. A participant stated: *I pray that the pandemic will pass quickly, and we can normally work again. (P14).* Nurses hope the society to obey with health protocol to prevent the transmission of COVID-19, as stated by P8: *I hope that the public obeys the health protocol because when I see the patient's condition in the ICU, which is very concerning, it feels very sad; I always pray that the pandemic will pass soon. (P8)*

4. Discussion

The present study examined the challenges faced by ICU nurses in caring for COVID-19 patients in Indonesia. Four themes were extracted as challenging things, including: "work under pressure and moral distress", "choose to do the best", "adaptation, learning and research", and "survive physically and mentally healthy".

4.1 Working under pressure and moral distress

The challenges of ICU nurses in COVID-19 wards included working under pressure and moral distress. Nurses feel they are responsible for providing care to COVID-19 patients, but that does not mean it is going without a hitch. The stress is caused by the unknown nature of the disease, fear of being infected, and the possibility of infecting others (Liu, Yang et al., 2020). Although nurses are tired and exhausted due to wearing protective suit for long periods of time, feel discomfort and helplessness due to the heavy workload during the shifts (Sun et al., 2020), nurses showed preserved intention to work during the COVID-19 outbreak (Mailani et al., 2021).

One of the sub-theme of working under pressure and moral distress is psychological suffering, which is also in line with a study by Karimi et al (2020) that nurses experience mental anxiety, stress, and fear. Their emotions feel suffering, their work becomes turmoil, and they survive lack of support. The emergence of this pandemic in many countries exposes nurses to new experiences and challenges such as inadequate resources, inadequate PPE, increasing number of patients, and lack of preparedness (overcoming pandemics). Conditions like this cause nurses' physical and mental strain and complex ethical problems (Chen et al., 2020; Zhang et al., 2020). In the fight against COVID-19, nurses are working valiantly to give care and save lives. In this study, participants also expressed challenges in providing care for unclear known diseases, providing nursing care to patients such as exhausting protective cover, changing work patterns, excessive workload, and working with new co-workers and new teams. Many of them work long shifts for weeks without taking a day off. ICU nurses also have to deal with the insecurity of their jobs. The uncertain nature of the sickness, the unpredictability of the disease prognosis, and the lack of a precise treatment induce stress. This situation puts them in danger of contracting COVID-19, leading to death (Catton, 2020).

This study showed that nurses work under pressure and have moral distress, such as physical exhaustion and psychological suffering. Previous research by Hu et al. (2020) reported that nurses experienced emotional tiredness (60.5 %), depersonalization (42.3 %), and 91.2 % of nurses experienced anxiety, despair, and moderate to high fear levels. The fear faced by nurses was due to the case of a nurse colleague who died from being infected with COVID-19, thus causing anxiety of disease infection for nurses who cared for COVID-19 patients. Numerous studies have demonstrated epidemic disease outbreaks put a psychological strain on nurses. Nurses caring for COVID-19 patients in the ICU are under a lot of stress, which puts them in danger of developing psychological problems like fear, worry, restlessness, depression, confusion, anxiety, nervous moods, and aggression (Moradi et al., 2021; Park & Park 2020). Without the added stress of a worldwide pandemic, the ICU is already a high-stress workplace. Caring for COVID-19 patients can turn acute stress into chronic stress, resulting in persistent anxiety and depression in these nurses (Gordon et al. 2021).

4.2 Choose to do the best

This study shows that caring for a COVID-19 patient was challenging for nurses; they fight against an uncertain situation, but they make an effort to keep joining to help a critical patient. Another pressure was how they worked and grew as decision-makers. Face problems like acute patients, maintain the care standart, demand empathy, care for patients' families long-distance, deal with painful emotions, humanity, and priority. These give nurses strategies to adopt in decision-making (Paixão et al., 2020). It involves emotional intelligence from nurses (James & Bennet, 2020). So, they can have a mechanism to maintain the care standart and care commitment during the COVID-19 (Woodson, 2021).

In a crowded situation when COVID-19 cases are increasing in several big cities in Indonesia, almost every day, there are full patients in the ICU for COVID-19. This causes an increase in the workload of nurses. Nurses face a dilemma and various confusing conditions in making decisions to provide care to patients, such as dealing with COVID-19 patients who have a cardiac arrest. Even though it is not recommended to perform CPR on COVD 19 patients in the ICU, nurses continue to take these actions for the sake of humanity. One of the challenges nurses face in providing nursing care is that the ratio of nurses to patients is not ideal, and nurses must think critically to take the best action to save patients' lives. The previous study also showed that nurses reported challenges providing human comforting connections, experiencing patient deaths, isolation, PPE concerns, care delays, changing clinical practice guidelines, and language barriers (Gordon et al. 2021).

During the pandemic emergency, nurses went through an extraordinarily delicate and complex period; their technical expertise and relational abilities, which are often associated with the care relationship, were put to the test. Providing thorough care during the pandemic's most severe phases was difficult. Other actions are prioritized due to many patients and their crucial and complex situations (such as the constant monitoring of vital parameters, the administration of therapy, and the management of machines and devices). As a result, there is little room for primary care (for mobilization, renewal of medications, help in feeding or personal care, and others) (Moretti et al., 2021).

The nurses' remarks about the care context revealed turbulence and a lack of support and equipment. To offer the correct care for COVID-19 patients, the care context encompasses a variety of components such as supportive equipment, personal protective equipment, facilities, and appropriate regulations and environmental conditions. The health care center's contextual flaws, according to nurses, are a substantial obstacle to giving quality care (Karimi et al. 2020). Furthermore, current stress, complicated patient care, confusing disease state, and system inefficiencies can all impact the quality of care provided by nurses (Hamers et al., 2016).

4.3 Adaptation, learning, and research

Another challenge in providing healthcare by ICU nurses during the COVID-19 pandemic is adaptation. Nurses' adaptation is a feedback mechanism that explains how dynamic systems evolve in planned and unplanned ways (Holden et al., 2013). Providing care for isolating patients, using hazmat suit, increasing workload, changing teams, changing the priority of action, and changing pandemic conditions are demanded from health institutions. This experience shows both strong and weak points in the health care system (Fernández-Castillo et al., 2021). Our study found that nurses experience physical fatigue due to changes in work patterns. Other research conducted by Galehdar et al. (2021) indicated that as the number of patients increased during the COVID-19 outbreak, nurses' working hours climbed by 1.5-2 times from what they had previously. Workload grows with increased working hours (Sun et al., 2020). The use of personal protective equipment that nurses wear for safety appears to have contributed to this overwhelming fatigue. Another study found that wearing protective equipment for extended periods makes nurses weary (Sun et al., 2020). Nurses must bear heavy and warm clothing until the end of their shift.

The participants in the study expressed their experience that the leadership made a policy to divide working hours into one shift, divided nurses into two teams, and took turns caring for patients in the red zone. Hence, the working hours of nurses using personal protective equipment are shorter. By implementing this program, nurses can refresh their break time by eating, drinking, going to the bathroom, and even taking a shower. The increasing number of COVID-19 cases requires nursing programs to be managed so that nurses can work optimally. Cadge et al. (2021) stated that one of the challenges of working with new co-workers and teams, such as building relationships on new care teams, had to be negotiated; nurses struggled with a lack of defined roles. Challenges arose from being paired with different nurse partners each day while also working with the unfamiliar staff is one of the challenges of the ICU nurses during COVID-19. According to Danielis et al. (2021), being recruited and transferred to the COVID-19 ICU is a double-face professional experience for nurses. The mix of negative feelings in the early stage can affect the preparation of nurses and the performance of nurses personally, in teams, and professions.

4.4 Survive physically and mentally healthy

The next challenge is to stay physically and mentally healthy. The spread of COVID-19 can reach professional health workers and nurses as the vanguard in facing challenges in changing physical and emotional conditions. The participants in this study tried not to be exposed to COVID-19 to increase immunity and control psychological disorders. Leng et al. (2021) suggest providing adequate training related to maintaining health and avoiding COVID-19, providing appropriate care for nurses during working hours, and the availability of psychological support. The participants also explained that these challenges include the condition of spirituality. Being sincere, fulfilling responsibilities, and not giving up are the keys to carrying out tasks; besides, participants always pray to God to start work and ask for care. According to Shahmari et al. (2020), nurses showed the spirit of self-sacrifice and did not give up on providing the best care.

Nurses also grieve because of their patients' suffering; they are competing for demands for attention from patients, families, health workers team, and their own families. Nurses endure longer working hours, higher schedules, and the intensity of a work environment where the failure of care and multiple deaths are the daily fare. These can increase stress levels (Jordan et al., 2016). According to the American Association of Colleges of Nursing (AACN) (2020), nurses need support for their health and resilience if they continue to work in stressful circumstances. Nursing is not only about care delivery to other people, but nurses must be aware that it is essential to take care of oneself first.

Nurses demonstrated a spirit of self-sacrifice and persisted in giving patients the finest care possible (Shahmari et al., 2020). Nurses' ability to provide care and professional commitment are related to nurses' spiritual health (Chiang et al., 2016). High spiritual well-being has reduced emotional fatigue (Rushton et al., 2015). Our participants also explained that these challenges include the condition of spirituality. Being sincere, fulfilling responsibilities, and not giving up are the keys to carrying out tasks; participants always pray to God to start work and ask for care. Praying is one practice to achieve psychophysical balance and wellness (Nilsson, 2022).

5. Implications and limitations

This study provides insight into the challenges of ICU nurses against COVID-19 in Indonesia. The findings of this study provide several implications for nurses and hospital management. First, hospitals must always provide equipment and preparations to support protection to make nurses confident in protecting themselves before giving nursing care to COVID-19 patients. Second, maintaining optimal human resource management functions by facilitating nurses to update knowledge related to the care of COVID-19 patients. Third, nurse management must create a good environment and provide support to increase nurses' morale in dealing with work pressure. And lastly, hospitals must also carry out health-related supervisory roles such as periodic swabs and monitoring of nurses' physical and psychological conditions to prevent the effects of workload.

The authors acknowledge that this study has limitations. What we are aware of in this study is the limitation of sampling. Participants in this study came from various hospitals in Indonesia with different bed capacities; this situation can lead to different challenging experiences for nurses. Participants in this study had previous work experiences in the ICU, with the duration of work varied, affecting the experience and skills of participants in caring for patients. In addition, this was a short-term study, and prolonged engagement with the subjects can provide a valuable way to identify the present and future challenges.

6. Conclusion

This study describes the challenges experienced by ICU nurses during the COVID-19 crisis, such as working under pressure, facing dilemmas caring for patients, and trying to survive working in inadequate professional conditions. An in-depth understanding of these challenges in the current pandemic can help managers in the hospital to provide psychological support, adequate training for ICU nurses, and high-quality protocols for upcoming emergency scenarios, as well as maximizing resource management (human and material). Nurses expect to be able to help patients; they work harder to give COVID-19 care to patients. Still, the pandemic conditions put physical and psychological pressure on them, so they are expected to be supported in their workplace. We suggest nurses recognize when they feel burnout and focus on fulfilling their life balance, nurses must know if they need health care providers to solve physical problems. Organizations need to make an effort to strengthen the structure of a workforce that will support each nurse in their professional nursing role. Given the difficulties nurses encounter in responding to pandemics, the findings can be used to construct and develop health care systems in Indonesia. The development of evidence-based systems results in the support and protection of the nurses, who make up the most valuable workforce in the healthcare system. That support immediately enhances patient care and safety.

Acknowledgment

The authors acknowledge the Faculty of Nursing, Universitas Andalas, for financial supports (contract number: 054b/SPK/PNBP/FKep/Unand-2021).

Author contribution

FM, EH: study design.
FM, EH: data collection.
FM, RM, BFK: data analysis.
FM, EH, BFK, EO: drafting and revision of the manuscript.

Conflict of interest

The authors declare no potential conflict of interest concerning this research, authorship, and/or publications of this article.

References

American Association of Colleges of Nursing (AACN). (2020). *AACN members endorse resolution calling for action to address nurse well-being*. *AACN*. https://www.aacnnursing.org/News-Information/Press-Releases/View/ArticleId/24707/ resolution-nurse-well-being-resilience

Bagnasco, A., Zanini, M., Hayter, M., Catania, G., & Sasso, L. (2020). COVID 19—A message from Italy to the global nursing community. *Journal of Advanced Nursing, 76*(9), 2212–2214. https://doi.org/10.1111/jan.14407

Cadge, W., Lewis, M., Bandini, J., Shostak, S., Donahue, V., Trachtenberg, S., Grone, K., Kacmarek, R,, Lux, L,, Matthews, C,, McAuley, M. E., Romain, F., Snydeman, C,, Tehan, T, & Robinson, E. (2021). Intensive care unit nurses living through COVID-19: A qualitative study. *Journal of Nursing Management*, *29*(7), 1965-1973. https://doi.org/10.1111/jonm.13353

Catton, H. (2020). Nursing in the COVID-19 Pandemic and beyond: Protecting, saving, supporting and honouring nurses. *International Nursing Review, 67*(2), 157–159. https://doi.org/ 10.1111/inr.12593

Chen, Q., Liang, M., Li, Y., Guo, J., Fei, D., Wang, L., He, L., Sheng, C., Cai, Y., Li, X., Wang, J., & Zhang, Z. (2020). Mental health care for medical staff in China during the COVID-19 outbreak. *The Lancet Psychiatry*, *7*(4), e15-e16. https://doi.org/10.1016/S2215-0366(20)30078-X

Chiang, Y. C., Lee, H. C., Chu, T. L., Han, C. Y., & Hsiao, Y. C. (2016). The impact of nurses' spiritual health on their attitudes toward spiritual care, professional commitment, and caring. *Nursing Outlook*, *64*(3), 215-224. https://doi.org/10.1016/j.outlook.2015.11.012.

Colaizzi, P. F. (1978). *Psychological research as the phenomenologist views it. Psychology*. Oxford University Press.

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

Danielis, M., Peressoni, L., Piani, T., Colaetta, T., Mesaglio, M., Mattiussi, E., & Palese, A. (2021). Nurses' experiences of being recruited and transferred to a new sub-intensive care unit devoted to COVID-19 patients. *Journal of Nursing Management*, *29*(5), 1149-1158. https://doi.org/10.1111/jonm.13253

Eghbali, M., Negrndeh, R., & Froutan, R. (2020). COVID-19 epidemic: Hospital-level response. *Nursing Practice Today,* 7(2), 81–83. https://doi.org/10.18502/npt.v7i2.2728

Fernández-Castillo, R. J., González-Caro, M. D., Fernández-García, E., Porcel-Gálvez, A. M., & Garnacho-Montero, J. (2021). Intensive care nurses' experiences during the COVID-19 pandemic: A qualitative study. *Nursing in Critical Care*, *26*(5), 397-406. https://doi.org/10.1111/nicc.12589.

Galehdar, N., Toulabi, T., Kamran, A., & Heydari, H. (2021). Exploring nurses' perception of taking care of patients with coronavirus disease (COVID-19): A qualitative study. *Nursing Open*, *8*(1), 171-179. https://doi.org/10.1002/nop2.616

Gordon, J. M., Magbee, T., & Yoder, L. H. (2021). The experiences of critical care nurses caring for patients with COVID-19 during the 2020 pandemic: A qualitative study. *Applied Nursing Research*, *59*, 151418. https://doi.org/10.1016/j.apnr.2021.151418

Guo, Y. R., Cao, Q. D., Hong, Z. S., Tan, Y. Y., Chen, S. D., Jin, H. J., & Yan, Y. (2020). The origin, transmission and clinical therapies on Coronavirus Disease 2019 (COVID-19) outbreak – An update on the status. *Military Medical Research, 7*(1), 1–10.

Hamers, J. P. H., Nijhuis-van der Sanden, M. W. G., Ettema, R. G. A., Heinen, M., Huisman-de Waal, G., de Man-van Ginkel, J. M., Metzelthin, S.F., Zwakhalen, S. M. G., & Schuurmans, M. J. (2016). Essential nursing care: Most provided, least evidence based. The basic care revisited program. *Journal of Advanced Nursing*, *72*(S1), 51-51.

Holden, R. J., Rivera-Rodriguez, A. J., Faye, H., Scanlon, M. C., & Karsh, B. T. (2013). Automation and adaptation: Nurses' problem-solving behavior following the implementation of bar-coded medication administration technology. *Cognition, Technology & Work*, *15*(3), 283-296.

Hu, D., Kong, Y., Li, W., Han, Q., Zhang, X., Zhu, L. X., Wan, S. W., Liu, Z., Shen, Q., Yang, J., He, H-G., & Zhu, J. (2020). Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study. *EClinical Medicine*, *24*, 100424. https://doi.org/10.1016/j.eclinm.2020.100424

International Council of Nurses. (2020). *COVID-19 and the international supply of nurses. International Council of Nurse* 27. https://www.icn.ch/system/files/2021-07/COVID19_internationalsupplyofnurses_Report_FINAL.pdf

James, A. H., & Bennett, C. L. (2020). Effective nurse leadership in times of crisis. *Nurse Management (Harrow)* 27(4), 32–40. https://doi.org/10.7748/nm.2020.e1936

Jordan, T. R., Khubchandani, J., & Wiblishauser, M. (2016). The impact of perceived stress and coping adequacy on the health of nurses: A pilot investigation. *Nursing Research and Practice*, *2016*, 5843256. https://doi.org/10.1155/2016/5843256

Karimi, Z., Fereidouni, Z., Behnammoghadam, M., Alimohammadi, N., Mousavizadeh, A., Salehi, T., Mirzaee, M. S., & Mirzaee, S. (2020). The lived experience of nurses caring for patients with COVID-19 in Iran: A phenomenological study. *Risk Management and Healthcare Policy*, *13*, 1271–78. https://doi.org/10.2147/RMHP.S258785

Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., Wu, J., Du, H., Chen, T., Li, R., Tan, H., Kang, L., Yao, L., Huang, M., Wang, H., Wang, G., Liu, Z., & Hu, S. (2020). Factors associated with mental health outcomes among health care workers exposed to Coronavirus disease 2019. *JAMA Network Open, 3*(3), e203976. https://doi.org/10.1001/jamanetworkopen.2020.3976

Leng, M., Wei, L., Shi, X., Cao, G., Wei, Y., Xu, H., Zhang, X., Zhang, W., Xin, S., & Wei, H. (2021). Mental distress and influencing factors in nurses caring for patients with COVID-19. *Nursing in Critical Care*, *26*(2), 94-101. https://doi.org/10.1111/nicc.12528

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. 1st ed. Sage publications.

Lipsitch, M., Swerdlow, D. L., & Finelli, L. 2020. Defining the epidemiology of Covid-19- Studies needed. *New England Journal of Medicine, 382*(13), 1194–1196. https://doi.org/10.1056/NEJMp 2002125

Liu, Q., Luo, D., Haase, J.E., Guo, Q., Wang, X.Q., Liu, S., Xia, L., Liu, Z,, Yang, J., & Yang, B. X. (2020). The experiences of health-care providers during the Covid-19 crisis in China: A qualitative study. *The Lancet Global Health* 8(6):e790–98. https://doi.org/10.1016/S2214-109X(20)30204-7

Liu, S., Yang, L., Zhang, C., Xiang, Y. T., Liu, Z., Hu, S., & Zhang, B. (2020). Online mental health services in China during the COVID-19 outbreak. *The Lancet Psychiatry*, *7*(4), e17-e18. https://doi.org/10.1016/S2215-0366(20)30077-8

Mahendradhata, Y., Andayani, N. L. P. E., Hasri, E. T., Arifi, M. D., Siahaan, R. G. M., Solikha, D. A., & Ali, P. B. (2021). The capacity of the Indonesian healthcare system to respond to COVID-19. *Frontiers in Public Health*, *9*, 887. https://doi.org/10.3389/fpubh.2021.649819

Mailani, F., Huriani, E., Muthia, R., & Sarfika, R. (2021). Nurses' intention to work during the COVID-19 outbreak in West Sumatra, Indonesia. *Nurse Media Journal of Nursing*, *11*(1), 50-60. https://doi.org/10.14710/nmjn.v11i1.34093

Mari, G. M., Crippa, J., Casciaro, F., & Maggioni, D. (2020). A 10-step guide to convert a surgical unit into a COVID-19 unit during the COVID-19 pandemic. *International Journal of Surgery, 78,* 113–114. https://doi.org/10.1016/j.ijsu.2020.04.052

Mays, N., & Pope, C. (2020). Quality in qualitative research. In N. Mays & C. Pope (Eds), *Qualitative research in health care* (pp. 211-233). Wiley-Blackwell.

Mehta, Y., Chaudhry, D., Abraham, O. C., Chacko, J., Divatia, J., Jagiasi, B., Kar, A., Khilnani, G. C., Krishna, B., Kumar, P., Mani, R. K., Rao, B. K., Singh, P. K., 13, Singh, S., Tiwary, P., Wattal, C., Govil, D., Dixit, S., & Samavedam, S. (2020). Critical care for COVID-19 affected

patients: Position statement of the Indian Society of Critical Care Medicine. *Indian Society of Critical Care Medicine, 24*(4), 222. https://doi.org/10.5005/jp-journals-10071-23395

Ministry of Health Republic of Indonesia. (2021). *Situasi terkini perkembangan Coronavirus Disease (COVID-19) 12 Mei 2021 [COVID-19 current condition as of 12 May 2021].* https://infeksiemerging.kemkes.go.id/situasi-infeksi-emerging/situasi-terkini-perkembangan-coronavirus-disease-covid-19-12-mei-2021

Moradi, Y., Baghaei, R., Hosseingholipour, K., & Mollazadeh, F. (2021). Challenges experienced by ICU nurses throughout the provision of care for COVID-19 patients: A qualitative study. *Journal of Nursing Management*, *29*(5), 1159-1168. https://doi.org/10.1111/jonm.13254

Moretti, C., Ceccaroni, S. E., Confortini, R., Roncaglio, C. M., Lionetto, V., Ndocaj, K., Festa, L., Calderone, C., Sarli, L., & Artioli, G. (2021). Taking care. Nursing towards Covid-19 patients during the pandemic emergency in Italy: A qualitative study. *Acta Bio Medica*, *92*(Suppl 2), e2021025. https://doi.org/10.23750/ABM.V92IS2.11944

Nilsson, H. (2022). Spiritual self-care management for nursing professionals: A holistic approach. *Journal of Holistic Nursing, 40*(1), 64–73. https://doi.org/10.1177/08980101211034341

Paixão G., Mills C., McKimm J., Hassanien, M. A., & Al-Hayani, A. A. (2020). Leadership in a crisis: Doing things differently, doing different things. *British Journal of Hospital Medicine, 81*(11), 1–9. https://doi.org/10.12968/hmed.2020.0611

Park, S. C., & Park, Y. C. (2020). Mental health care measures in response to the 2019 Novel Coronavirus outbreak in Korea. *Psychiatry Investigation,* 17(2), 85-86. https://doi.org/10.30773/pi.2020.0058

Phua, J., Faruq, M. O., Kulkarni, A. P., Redjeki, I. S., Detleuxay, K., Mendsaikhan, N., Sann, K. K., Shrestha, B. R., Hashmi, M., Palo, J. E. M., Haniffa, R, Wang, C., Hashemian, S. M. R., Konkayev, A., Mat Nor, M. B., Patjanasoontorn, B., Nafees, K. M. K., Ling, L., Nishimura, M., … Fang, W. F. (2020). Critical care bed capacity in Asian countries and regions. *Critical Care Medicine, 48,* 654–62. https://doi.org/10.1097/CCM.0000000000004222

Qiu, H., Tong, Z., Ma, P., Hu, M., Peng, Z., Wu, W., & Du, B. (2020). Intensive care during the coronavirus epidemic. *Intensive Care Medicine*, *46*(4), 576-578. https://doi.org/10.1007/s00134-020-05966-y

Rushton, C. H., Batcheller, J., Schroeder, K., Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care, 24*(5), 412–421. https://doi.org/10.4037/ajcc2015291

Schroeder, K., Norful, A. A., Travers, J., & Aliyu, S. (2020). Nursing perspectives on care delivery during the early stages of the covid-19 pandemic: A qualitative study. *International Journal of Nursing Studies Advances, 2,* 100006. https://doi.org/ 10.1016/j.ijnsa.2020.100006

Schwartz, J., King, C. C., & Yen, M. Y. (2020). Protecting health care workers during the COVID-19 Coronavirus outbreak - Lessons from Taiwan's SARS response. *Clinical Infectious Disease, 71*(15), 858–860. https://doi.org/10.15797/concom.2019..23.009

Shahmari, M., Nasrabadi, A., N., & Akram, G. (2020). Lived experiences of Iranian ICU nurses in the care of patients with Covid-19: A phenomenological study. Preprints. https://doi.org/10.21203/rs.3.rs-72171/v1

Sun, Q., Qiu, H., Huang, M., & Yang, Y. (2020). Lower mortality of COVID-19 by early recognition and intervention: Experience from Jiangsu Province. *Annals of Intensive Care*, *10*(1), 1-4. https://doi.org/10.1186/s13613-020-00650-2.

Woodson, D. (2021). *Leadership, job stress and uncertainty among nurses during the Covid-19 pandemic: Impacts and implications in Lieu of pertinent theoretical constructs* [College thesis, The University of Southern Mississippi]. *https://aquila.usm.edu/honors_theses/762/*

World Health Organization. (2021). *COVID-19 weekly epidemiological update, edition 58, 21 September 2021*. World Health Organization. https://apps.who.int/iris/handle/10665/345456

Worldometer. 2021. *Corona virus cases.* https://www.worldometers.info/coronavirus/

Yunus, F., & Andarini, S. (2020). Letter from Indonesia. *Respirology,* 25, 1328–1329. https://doi.org/ 10.1111/resp.13953

Zhang, W. R., Wang, K., Yin, L., Zhao, W. F., Xue, Q., Peng, M., Min, B. Q., Tian, Q., Leng, H. X., Du, J. L., Chang, H., Yang, Y., Li, W., Shangguan, F. F., Yan, T. Y., Dong, H. Q., Han, Y., Wang, Y. P., Cosci, F., & Wang, H. X. Mental health and psychosocial problems of medical health workers during the Covid-19 epidemic in China. *Psychotherapy and Psychosomatics*, *89*(4), 242–250. https://doi.org/10.1159/000507639