Introduction

Coronavirus disease 2019 (COVID-19) is a problem faced by all countries in the world. By Nov 23, 2021, more than 256 million confirmed cases and over five million deaths in the worldwide [1]. Up to November 15, 2021, according to the Indonesian Ministry OH Health, the number of active cases in Indonesia was 4,251,076 and there were 143,670 deaths [2]. Health workers as the front-line care provider for patients are at high risk of being infected by infectious disease [3]. The International Council of Nursing reports that at least 90,000 healthcare workers have been infected, and more than 260 nurses have died of COVID-19 in 60 countries until May 2020 [4]. Meanwhile, from December 2020, there was 572 healthcare worker died and 171 nurses who died due to COVID-19 in Indonesia [5].

The COVID-19 pandemic has had a major impact on the workload of nurses. Research in the Netherlands and Belgium showed an increase in the workloads of nurses as expressed by a higher nursing activity score in the COVID-19 room [6], [7]. The workloads of nurses are increasing along with a high nurse-patient ratio (8). The increase in the workloads of nurses is caused by them being more committed to fulfilling personal hygiene, mobilization and positioning, patient family support, and respiratory care [8]. Complex procedures such as setting patient in a prone position or administering extracorporeal membrane oxygenation further increase nursing activities. The nurses also engage in more routine monitoring of patients, deal with environmental factors such as risk of exposure, and grapple with adverse events. This contributes to higher workloads than in non-COVID rooms [9].

Nurses’ perception of the heavy levels of their workload results in significant direct effects on patient and nurse outcome. Patient outcomes include medication errors, patient falls, and urinary tract infections. Nurse outcomes include emotional exhaustion and job dissatisfaction [10]. The impact of a high workload also causes fatigue in nurses and affects the quality of care and patient safety [11]. For those nurses who are clinical practice, its impact also has psychosocial ramifications. Nurses’ have been reported...
to undergo stress related to separation from family and heavy workloads created by health system demand and staff shortages [12].

In this unpredictable era of COVID-19, new factors can affect the workloads of nurses. There is very little research, especially qualitative studies, on nurses' perceptions of their workloads in a COVID-19 isolation room. Nurses' perceptions are influenced by nurses' experiences in doing their jobs; therefore, it is appropriate to use qualitative studies. This study aims to explore nurses' perceptions of workload in COVID-19 isolation rooms.

**Methods**

A qualitative study with an exploratory descriptive approach was conducted in this research. The participants were nurses who working a COVID-19 isolation ward. This study was conducted at the General Hospital in Jakarta, which is the largest COVID-19 referral hospital in South Jakarta. The participants were enrolled in the study using purposive sampling. The criteria for participants was having at least 1 month of experience working with COVID-19. Data were gathered online through semi-structured interviews conducted using videos that were recorded during interviews at convenient times for the participants. Data were collected between November 2020 and March 2021. The researchers first requested data from the head nurse, who was contacted by the researchers to explain the goals and obtain the necessary consent from participants. The researchers then scheduled an interview appointment at a convenient time. Based on the data collection, the process stopped when data were saturated such that no new data were released by the participants. The duration of each interview was based on the participant’s desire and experience. The interview ranged from 45 to 60 min. The main questions of the interview were as follows: “Please describe your activities in a day of taking care of patients in the ward.” and “How do you feel about nursing activities during your working shift?” The researchers then asked “What do you mean?” or “Please explain on...” The researcher used probing questions until the goals were achieved. This study received an ethical review from the Faculty of Nursing, University of Indonesia number SK-181/UN2.F12.D1.2.1/ETIK, May 18, 2020, and from the hospital where the research was located. Before conducting interviews, informed consent was secured from all participants.

The analysis was conducted using the constant comparison approach to analysis developed by Glasser and Strauss [13]. After the interview, a verbatim transcript was generated. The transcript was then read repeatedly to determine coding. After deriving the coding from the transcript, the participants’ opinions were grouped into subcategories and then again into categories using the NVivo application. After identifying the categories, the same categories are grouped into main themes.

**Results**

Four men and five women served as participants in this study. The mean age was 34.8 ± 3.8, and the mean work experience as 11.4 ± 6.8 years (Table 1). There are four main themes and eight categories (Table 2).

**Distribution of workload**

The results of the analysis show that the workload of nurses caring for COVID-19 patients is influenced by the division of work shifts and the arrangement of nurses’ activities during the work period. The distribution of workloads consists of two categories, division of labor and cooperation.

**Division of labor**

The division of work is carried out by the nurse-in-charge, who divides nurses in the infection (red) and clean (green) zone into two groups based on each nurse’s morning and afternoon shifts. The nurses in morning shifts are further divided into two groups, while those in night shifts are divided into three groups. The morning shift starts at 8–11 PM then changes roles in the green and red zones from 11 to 2 PM to reduce the workload, the division of labor is divided between the red zone and green zone rooms. The division of time to enter the red zone is between 3 and 4 h per group to reduce fatigue for nurses. The participants were quotes as saying the following:

“We have a division, a division of tasks, so after the handover, we implement the medicines and also the schedules, so every 2 h or 3 h there is a nurse who enters the isolation room” (P2)

“First of all, there was almost a month that I never slept at all. We did not sleep. So when we wanted to go to a group, there were still a few personnel who wanted to sleep. Suddenly the patient was bad, so what are we going to do again? That's how it used to be before, right, slowly, oh, it is like this, the rhythm is, oh, it works here. So we’ve shared it now. Alhamdulilah, the rhythm is already good. The rhythm is good. The group is also good. Like yesterday’s fasting, the rhythm is already good, It depends on how we arrange it” (P9)

**Cooperation**

The results of the analysis show that nurses divide activities into zones, which consist of the red
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Table 1: Characteristics of participants

| Code | Age | Gender | Marital status | Unit deployment | Role | Clinical level | Years of experience | Length of deployment (month) |
|------|-----|--------|----------------|-----------------|------|---------------|--------------------|-----------------------------|
| N1   | 36  | Male   | Married        | Isolation ward  | Bedside nurse | CNL 2          | 14                 | 9                           |
| N2   | 32  | Female | Single         | HCU COVID       | Bedside nurse | CNL 1          | 10                 | 7                           |
| N3   | 44  | Female | Married        | Isolation ward  | Nurse in charge | CNL 3       | 3                  | 4                           |
| N4   | 32  | Male   | Married        | Isolation ward  | Bedside nurse | CNL 1          | 14                 | 9                           |
| N5   | 43  | Female | Married        | ICU Ventilator  | Bedside nurse | CNL 2          | 2                  | 6                           |
| N6   | 34  | Female | Married        | HCU COVID       | Bedside nurse | CNL 2          | 10                 | 6                           |
| N7   | 45  | Male   | Married        | ICU COVID       | Nurse in charge | CNL 1       | 2                  | 2                           |
| N8   | 36  | Male   | Married        | ICU Ventilator  | CNL 1        | 16                | 6                  | 12                          |
| N9   | 34  | Female | Single         | ICU Ventilator  | Bedside nurse | CNL 2          | 2                  | 12                          |

Table 2: Themes, categories, and sub-categories

| Themes | Categories | Sub-categories |
|--------|------------|----------------|
| Distribution of workload | Division of labor | - Division of shifts |
| | Cooperation | - Division of groups |
| Workload increase factors | Non nursing care factor | - Activities inside (red zone) |
| | Over working capacity | - Outdoor activities (green/clean zone) |
| Challenge | Physical fatigue | - Added tasks from other health care |
| | Psychological stress | - Train new staff |
| | Nurses’ expectations of workload | - Nurses transferred to new COVID ward |
| | Management | - Nurses must meet all patient needs |
| | Support | - Nurse-patient ratio |
| | Comprehensive care for patient | - Dilemma of wanting to help patients and fear of getting infected |
| | - Does not meet the psychological needs |

Non-nursing care factor

The results of the analysis found that nurses do not only work related to their main job, namely nursing care, but are also charged with other non-nursing care jobs, such as food distribution and milk preparation. Nurses also conduct housekeeping, draw blood for laboratory examinations, write prescriptions, administer medication and perform administrative tasks. The following are statements from participants:

“...That was also negotiated but they were still afraid. They just carried a trolley and lunch box to the front of the iron door even though they were already wearing dresses. We will distribute it all later. We will also collect the lunch box trash. Make sure it is tidy first and then we will go out.” (P3)

“...They (food delivery person) does not come in (the red zone). They just hand over to the nurse that the food for the patient has arrived, so we transfer it from the outside room into the red zone” (P5).

“Sometimes, nurses also do administrative work, for example, entering doctor’s visit data into the computer, because not all rooms have administrative staff, I do not think it is our priority work, it is not in a nurse’s job description.” (P1)

Over working capacity

A new COVID-19 isolation ward addition caused some of nurses to be transferred to the new room. This caused a shortage of nurses in the isolation ward. The shortage of personnel was a big obstacle during the pandemic. Hospitals and new rooms were ready to use staff urgently, especially at the peak of the pandemic. The senior nurses have to teach a new staff, so that a burden on senior nurses in the ward. The following are statements from the participants:

“In the past, the COVID was only a few rooms. Now there are more and more rooms, the nurses are increasingly divided into new wards. In the past, COVID patients were only a few rooms. Now the rooms are getting more and more nurses. The more they are divided up, is not a team. If there are four nurses in the afternoon, we are eight nurses. One team consists of four nurses. Right now, when we are going in the red zone (infected zone) and the green zone (clean zone). As it is known that nurses cannot directly provide care like they could under normal conditions, nurses divide up activities in the green zone and generally regulate interventions to be carried out on patients such as preparation for blood tests and swabs, preparing drugs, recording and documentation, observing vital signs through monitors, and contacting doctors and radiology officers. Activities inside the zone include observation, patient assessment, and all other actions relating to the patient.
zone, we are taking care of 12 patients with one nurse. If we take care of him inside, we serve all of patient need, from diapers, urinating, scratching..." (P7). "Yes, fine, in my conscience is actually sincere, because it’s a pandemic situation. What I have felt from March until now, I feel. I’m tired too, well, teaching people also requires patience and takes a lot of time." (P8)

**Challenges**

The challenges of caring COVID-19 patients include physical fatigue and psychological stress. Workload challenges arise from work environment factors such as the use of personal protective equipment. There is also a sense of psychological exhaustion because of the dilemma between the desire to help and the fear of being infected; thus, it is necessary to increase both physical and psychological alertness.

**Physical fatigue**

Nurses who treat COVID-19 patients feel tired due to the use of PPE over a long period of time and with an increasing number of patients. The participants said:

“I am so tired, because that one night we really only tried to sleep for a while and only eat for an hour at most, because we constantly had to wear hazmat” (P8). "The challenge of working in the COVID room is that you have to wear PPE making it difficult to do work such as feeding, bathing, changing diapers and other work" (P7). “The 8 month period has started a lot... tired these 8 months are hard times, the number of patients is getting higher” (P5)

**Psychological stress**

The results of the analysis found that nurses also experienced psychological stress. Nurses feel a dilemma because they want to provide the best service, yet they are afraid of being infected with COVID-19. Another participant stated that the challenge is to prepare physically and psychologically. The following is the participant’s statement:

“The problem is ... I want to come in to help but how can I? I have to use PPE first, I’m also wary. Be careful, I’m still scared too...”(P6). “Physical and psychological challenges because it is different from the times before the pandemic, this pandemic is more difficult. Because the number of COVID cases is increasing day by day. Suddenly there are patients who are confirmed suddenly and come without us knowing. We have to improve physically and psychologically”(P4)

**Nurse’ expectations**

The Nurses’ expectation is support from managers and moreover nurses can provide more comprehensive care to their patient. Manager support is very much needed in especially the pandemic situation.

**Management support**

The results of the analysis reveal the desire of leaders not to rotate nurses who have been trained in leadership and support for other nurses. The nurses’ hope for manager to not rotate nurses who have been trained and to not require them to perform non-nursing care jobs. The participants said the following:

“If you are already in the ICU, you are existing in the ICU. If manager really wants to add more personnel, do not send anyone out from this room. New nurses who were placed in ICU to be confused. But now, our team in the ICU was quite good” (P9). “Yes, they were supposed to be working according to their profession” (P8)

**Comprehensive care**

Nurses hope to be able to provide psychological support, but find this difficult due to the large ratio of nurses to patients. One of the nurses stated: “How do we meet the psychological needs of the patient? Because sometimes we think about the patient’s biology and so on, the patient’s psychology may not be considered, in my opinion, because the number of patients, maybe one person, is right compared to seven. It’s like wow… it’s a bit difficult, isn’t it?” (P2).

**Discussion**

The workload of nurses involves all the time and care exerted to carry out direct and indirect care activities for patients, workplaces, and professional development [14]. Nurses who work in COVID-19 rooms have different activities from those working in other rooms; this requires new strategies to regulate their activities. Activities in the COVID-19 isolation room are fully carried out by nurses because this approach minimizes the spread of COVID-19 to other people. Nurses perform activities based on shift times, which are divided into three shifts following a morning-afternoon-night scheme with an 8–8–10 h schedule. Nurses in each shift alternate entering the isolation room (red zone) for 3–4 h. The morning shift is divided into two groups and the night shift into three groups. The results of the study also find that the nurses had to work together in the red zone and green zone area. This practice differs from studies in several countries that apply longer shifts of 8–12 h to overcome the shortage of nurses, longer shifts cause dehydration, and discomfort [15] Working longer shifts puts nurses at higher risk of mental and
physical exhaustion, increased stress and decreased performance and quality of care [16].

In this study, one of the factors that increased the workload of nurses was the non-nursing care factor. There were three categories that were mainly focused on the adoption of non-nursing care by nurses and on increasing work capacity. These findings are in line with other research which found that the factors that influence the increase in the workload of nurses are due to non-nursing care factors, including work from the organization, coordination with other staff, lack of self-control due to increased work capacity, and work environment factors [17]. Other supporting research papers state that the biggest factor in increasing the workload of nurses and causing burnout is household activities [18]. Other studies from the literature review also find that non-direct patient care factors affect nursing workload. This study classifies the causative factors as follows: hospital and ward characteristics, nursing team characteristic, characteristics of individual nurse, and patient and family characteristics [19].

A synthesis of literature reviews shows that the studies obtain results from various research methods, such as time-motion, work sampling, and self-reporting versus external observation. It was found that nurses spent half their time providing direct care and documentation. Nurses also carry out several non-care activities that should be delegated to nurse assistants or other staff, such as patient transportation, resulting in some nurse activities such as fostering relationships, patient therapy education, and patient assessments being neglected [20].

In this study, it was learned from the interviews of the nurses that health workers experience fear and anxiety when providing services to patients. Some professions or health workers other than nurses were found to be reluctant to enter the red zone and entrust their tasks to nurses, such as distributing food, cleaning, explaining medicine, and administrative tasks. This is in line with Muller’s and other studies showing that many healthcare providers deal with depression, anxiety, insomnia, and mental distress. Female nurses are more likely to have mental health problems than other health workers [21], [22]. It should be noted that other hospitals may have different policies in room management that promote teamwork and a proper delegation of tasks among their health workers. The results of other studies found that professionals (doctors, nurses, physiotherapists, and pharmacologists) can use their knowledge and resources to cope with delirium despite the heavy workload and clinical challenges posed by the pandemic [23].

The increase in work capacity is due to all the patient needs being met by nurses, given that COVID-19 patients cannot be visited by their families. Nurses working in the COVID room experience a new, challenging work scenario. Nurses are required to expert a greater effort to care for patients because patients cannot receive outside visitors, thus patients depend on the support of health workers [12]. The increase in capacity is also due to a shortage of nurses; this causes the nurse-patient ratio to increase. In this study, it was found that during the pandemic, the nurse-patient ratio increased to 1:12 patients in the COVID-isolation room. In line with this study, it is known that there is a significant relationship between nurse-bed ratio and nurses’ perceptions of their ability to cope with the workload in the ward [24].

Data analysis shows that nurses find many challenges in working in the COVID-19 isolation room, such as fatigue and psychological stress. Nurses were found to be tired due to the use of PPE. In line with other research, it was found that the burden faced by nurses working in COVID rooms was higher than those working in non-COVID rooms, thereby increasing physical and mental stress on nurses [25]. Another study found that the capacity to provide care in the ICU reached three patients, causing the nurses to feel fatigued. The complexity of the care provided was compounded by the limited number of staff, leading to an increased workload and physical fatigue [26]. Extreme fatigue is also caused by prolonged use of personal protective equipment [27]. According to research, there was significantly higher fatigue score for providers wearing PPE compared with the baseline specifically among prehospital providers [28]. This in line with qualitative research that found that self-management of health workers treating COVID-19 increasing self-awareness by strengthening the immune system, maintaining a proper diet, and psychologically dealing with stress [29].

The expectations of nurses have not been treated comprehensively. A qualitative study stated that nurses experienced panic anxiety in rapidly changing situations, care erosion, feelings of helplessness after seeing patients suffering, and the dilemma between providing comprehensive care and fearful of being infected with COVID19 [26]. This also affected nurses, so nurses kept their distance from their patients. Other studies suggest that health institutions provide opportunities for nurses to support one another and discuss the stress they experience [30].

**Conclusion**

Nurses’ workloads have increased in caring for COVID-19 patients. This is due to many factors. In this study, it was found that nurses’ perceptions of their workload consisted of four themes, namely: the division of work, factors that increase workload, challenges, and expectations of nurses caring for COVID-19 patients in isolation rooms. The division of labor through the division of shifts, alternate into the red zone, and cooperation between health workers who work inside
and outside the room all form part of a nurse’s division of work. Factors that increase the workload of nurses are the addition of non-nursing care jobs from other health workers and the teaching of new nurses. The challenge of increasing the workload can cause fatigue for health workers, especially nurses, which in turn decreases the quality of patient care. Nurses must also always remain vigilant using PPE, even though other challenges increase nurses’ fatigue. The hope of nurses is that health institutions provide support so that nurses who have been trained are not rotated to other places, especially in the healthcare profession where teamwork is necessary to provide the proper care for COVID-19 patients. Nurses also hope to provide comprehensive nursing care including biological, psychological, social, and spiritual care.

The COVID-19 era creates new problems in the workload of nurses; thus, it is necessary to consider the creation of institutions that provide support to nurses. Nurses need resource support and psychological support. Institutions also need to prepare skilled personnel before placing them in the COVID-19 room, and it is recommended that they do not rotate to experienced nursing staff. Finally, support from other teams of health workers is necessary to be able to work together as a solid team.

**Limitations**

Among the limitations of this research is the fact it could not have been conducted face-to-face due to restrictions on outside visitors. Interviews were conducted through video call media; this could lead to a less optimal understanding of the phenomena and conditions of the isolation room.

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