Exploration of Factors Predictors Nurses' Occupational Stress on Facing Covid-19 Pandemic

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ABSTRACT

Background: The fluctuating wave of Covid-19 cases induced the nurses' work pressure, both physical and psychological. Occupational stress and burnout were caused by a nursing care plan, moving the nursing and health equipment. It influences decreasing in nursing care, working motivation, and patient safety, such as falls and medication errors. This study aimed to evaluate the factors influencing nurses' occupational stress in facing Covid-19 Pandemic in Yogyakarta. **Method:** The mixed method was used in this study. Using convenience sampling, 272 nurses who work at the Covid-19 hospital in Yogyakarta. The inclusion criteria were registered as Indonesian Nurses; with one-year experience of in work. The Nurses Occupational-Stress Scale 21 (NOSS-21) and Family Support Scale (FSS) were used to evaluate the nurses' occupational stress and the family support system. It was analyzed using binary logistics. **Results:** The nurses' occupational stress showed a mean score of 44.40 ± 9.077. This score indicated low nurses' occupational stress. Age and nurses' position had statistically significant positive effects on nurses' occupational stress (β = 6.305; p = 0.00) and (β = 0.469; p = 0.021). **Conclusion:** The nurses' occupational stress is related to the nurses' ages and position in the area of their work at a hospital.

Introduction

Fluctuated Covid-19 cases have been happening since 2020. The new variant was found in the middle of 2022, called XBB. In November 2022, the Covid-19 victims were 5600. This situation has psychological pressure impact, on both the people and the health practitioners. Based on the literature, there was 55% of nurses have high physical work pressure and 62.5% of them have moderate psychological work pressure. The work stress of nurses is the result of conflictive, manage-patients as well as the terminally ill, low remuneration, value conflict, and professional development [1].

The stress workplace is also the result of work-hour overload and other activities, such as nursing care plans; moving the nursing and health equipment [2]. Moreover, Covid-19's World Health Organization (WHO) protective standard procedures are increasing the uncomfortable of nurses' feeling [3]. The psychological discomfort is originated from occupational stress and burnout. It influences the decrease in nursing care [2], working motivation [4], and patient safety, such as falls and medication errors [5]. Medication errors in nursing have fatal effects such as patient harm and the nurses also suffer from the loss of trust of patients and patient families who experienced medication errors [6].

However, they need some of managing stress due to reduce medication errors for the patients. These strategies and techniques are talking to friends, resting, doing sports, reading, eating healthily, listening to music, watching tv, and others [1]. This study is to explore the factors predictor of occupational stress of the nurses facing Covid-19 at Yogyakarta Hospital and which factors most often cause occupational stress of nurses in the hospital.

Materials and Method

A cross-sectional study with a narrative descriptive study was used in this study. The study was held in the Covid-19 of Yogyakarta Hospital. There were 272 respondents and 5 participants were involved in this study during June – August 2022. The inclusion criteria were nurses who had one year of experience, working at a Covid-19 hospital. The outpatients and operating nurses were excluded.

The Family Support Scale (FSS) and Nurses' Occupational Stressor Scale 21 (NOSS 21) were used in this research. The quantitative was analyzed by binary logistic. Moreover, content analysis was used in a qualitative study. FSS consisted of 20 items that explored the emotional, instrumental, informational, and social of family support. Furthermore, the NOSS-21 explored nurses' work stress at the hospital. It was developed by Chen et al., (2020) and consist of 21 items, including work demand; work-family conflict; insufficient support from coworkers or caregiver; workplace violence and bullying; organization issues; occupational hazards; difficulty taking leave; powerlessness; and unmet basic psychological needs [7].

The questionnaires were shared by the education and research hospital committee. Finally, the researchers and the committee checked and pre-viewed these questionnaires. The study was analyzed by binary logistic with the SPSS 21. Furthermore, the qualitative method used content analysis with descriptive analysis. The data divided into two groups, there were:

1. Nurses' Occupation Stress Scale 21 (NOSS 21): Low occupational stress was 21-45 (group 1). High occupational stress was 46-84 (group 2). This group was based on the median score which was 45. A score of 45 and below was low; above 45 was high.
2. Family Support Scale (FSS). The maximum score was 80. The score was divided by Bloom's attitude value [6]. The low category was 63 and below; the high category was above 63.
3. The age was divided into 2 groups. There were 45 years old and below; and above 45 years old [7, 8]. Value "1" for respondents who were 22-45 years old; value "2" for those more than 45 years old.
4. Work length was value "1" who work 1-5 years; value "2" for whom more than 5 years. A person who works for 1-5 years is capable to know and have adaptive behavior in their work [9]. They also know their role in improving their knowledge, skills, and work management [10].
5. The professional designation was divided into shift lead nurses and associate nurses.
6. Nurses' education was diploma (code 1); bachelor and magister (code 2).
7. Covid-19 work experience was divided into 0-1 year experience (code 1) and more than 1-year experience (code 2).

The Trustworthiness was credibility (the debriefing was done by psychiatric nurses and the qualitative researcher), transferability (the researchers gave the readers the data, such as to the nurses. They agreed and accepted the result), dependability (the data was analyzed in a structured and integrated. It can be seen in the themes and the analyzed table), and confirmability (the result had reflected with the other theory such as stress occupational in nurses and psychological effect of Covid-19 for nurses). The research protocols had been approved by Research Ethic Committee on PKU Muhammadiyah Yogyakarta Hospital with the approval number 00173/KT.7.4/VI/2022.

Results and Discussion

Results

Table 1 showed that the mean age was 36.93 ± 8.898. Moreover, the mean NOSS-21 score was 44.40 ± 9.077. Additionally, the family support of the respondents was high with a mean of 75.86 ± (7.551) and the maximal score was 80. The majority of the respondents were female (86%),

worked as associate nurses (78.3%), had diplomas degree education (69.1%), and had experience in Covid-19 wards (69.9%).

Table 1. Demographic Characteristics of The Respondents (N=272)

Characteristic	f (%)
Age (years)	x̄(σ) = 36.93 (8.898)
NOSS-21	x̄(σ) =44.40 (9.077)
FSS	x̄(σ) =75.86 (7.551)
Working Experience (years)	x̄(σ) =13.38 (9.264)
Gender	
Male	38 (14)
Female	234 (86)
Professional Designation	
Associate Nurse	213 (8.3)
Shift Lead Nurse	59 (21.7)
Nursing Education	
Diploma	188 (69.1)
Bachelor	83 (30.5)
Magister	1 (0.4)
Covid-19 Care Experience	
Yes	190 (69.9)
No	82 (30.1)

The binary logistic results of the total sample of 213 associate nurses and 59 shift lead nurses with 45.6% in low work-stress level. The predominantly below 45 years old's nurses' samples were high work-stress levels. the table also displayed that the majority of nurses had a high level of family support (N=246). The female and associate nurses were dominant with 86.03% and 78.31%. Moreover, the nurses who work more than 5 years were bigger than those below 5 years, it was around 68.75%. At the end of the table, information showed that 190 nurses, or 69.85% had experience in Covid-19 wards (Table 2).

Table 2. Binary Logistic and Cross-Sectional Results

Characteristic (N=272)	NOSS-21				B	OR (95%)	P-Value
	Low (<45)		High (≥45)				
	f	%	f	%			
Age							
≤45 years old	99	36.4	117	43	1.841	6.305 (2.60 – 15.32)	0.00*
>45 years old	49	18	7	2.6			
Family Support							
≤63	10	3.7	16	5.9	0.508	1.693 (0.69 – 4.00)	0.256
>63	138	50.7	108	39.7			
Sex							
Male	25	9.2	13	4.8	-0.555	0.574 (0.26 – 1.24)	0.159
Female	123	45.2	111	40.8			
Work-Lenght							
1-5 years	37	13.6	48	17.6	0.137	1.147 (0.65 – 2.02)	0.635
> 5 years	111	40.8	76	27.9			
Professional Designation							
Associate	124	45.6	89	32.7	-0.756	0.469 (0.25 – 1.89)	0.021*
Shift leads	24	8.8	35	12.9			
Covid care experience							
Yes	94	34.6	96	35.3	0.366	1.442 (0.78 – 2.66)	0.240
No	54	19.9	28	10.3			

*Note: *) p<0.05*

Furthermore, the result of qualitative based on 5 participants. It had 4 themes including 1) Feeling fatigue because of the lack of nurses; 2) Feeling exhausted because of the hospital

management system and the seniors; 3) Stress because of deficit Covid-19 knowledge; 4) Hopelessness because of the worsening condition of the patients.

Firstly, feeling fatigued because of the lack of nurses in context, it had lack of the number of nurses in caring for Covid-19 patients. As a result, the work stress of nurses growth up significantly. It was drawn in the participants' sentences:

> *"In my hospital, there is only one nurse for five patients. The service to patients is not maximal as a result."* (P3)

> *"In my ward, it has 10 beds full of ventilators machines. Sometimes the ventilator is a sign beep at the same time. However, the nurses are only two persons. It is exhausting and it could be worse if we should fulfill their needs. Finally, we should arrange what should we do and how can we serve the patients at the same time."* (P2)

Secondly, the theme was "feeling exhausted because of the hospital management system and the seniors". It showed that management and seniority had increased the work-stress level for nurses. It could be seen:

> *"There is any pressure from the top… Medical record should be turned it back to medical record's room and it should be complete including the doctor's signature within 24 hours."* (P3)

> *"The seniors are always pushing the junior to care for the Covid-19 patients more than them. It is very disgusting me. They do when I was pregnant. In addition, the senior sometimes said you are junior, so please put into the room."* (P5)

The next theme is "Stress because of deficit Covid-19 knowledge". This theme showed that the nurses were not ready to care for the patients with Covid-19. Because it is the new one. Moreover, based on the symptoms, pushed them to learn about critical nursing care in a limited time. It was seen in the below sentence.

> *"However, when the pandemic occurred for the first time, I should upgrade my knowledge, whatever I like or dislike, I should learn about critical nursing care. The hardest thing was skill upgrades such as blood gas analysis, blood culture, especially ventilator machines."* (P2)

The last theme was "Hopelessness because of the worsened condition of the patients". It meant that the nurses were sad and helpless facing the worsening Covid-19 patients. The sentences below explained the meaning of the theme.

> *"I feel… I saw the ventilator's patients, it was uncomfortable… They were oxygen desaturation."* (P3)

> *"I was sad when I knew that they were dead at the end… Stress was increasing in the isolation room… It gave me a sign that Oh God… I was useless to them and getting desperate then. They have been for a while in Covid-19's caring, however, they were getting worse."* (P1)

Discussion

This study explored the nurses' stress responses when they cared for patients in Covid-19's pandemic. The quantitative study explored the factor analysis of the work stress in nurses, then the qualitative with in-depth interviews explored the deeper factors related to work stress for nurses. Based on the result, there were only two factors that influenced the work stress of nurses, there were age and professional designation. Age was the first factor with $p = 0.00$ ($\beta = 6.305$ ($2.6 – 15.32$). It showed that age significantly affects the nurses' work-stress level. Nurses who suffer from stress are higher in the range of age 26 to 36 years old [11]. The additional, age below 45 years old contributed six times in increasing the stress level in nurses. Older nurses have lower burnout and stress [12, 13]. The older age relates to lower emotional and physical reactivity to interpersonal stressors [14]. It is called a negative impact on mental health. The increased negative impact on mental health can be attributed to sudden lifestyle changes and impaired social activity [15].

In hospital policy, nurses who are 45 years old and above are forbidden to work in red area Covid-19 wards. People with 20 – 40 years old on age are in good health and wealth [16]. Moreover, based on other studies age has a correlation with the severity of Covid-19 [17]. Age is one of the conditions connected to a poor state of health [18]. Covid'19 risk is increasing in people who underlying medical conditions, such as diabetes, heart disease respiratory disease, or hypertension [18, 19, 20, 21]. The nurses who are 45 years and above only for supervising, controlling, and communicating with nurses in the red zone and green zone [21]. It was shown by theme two which is feeling exhausted because of the hospital management system and the seniors. The seniors are concerned with nurses who are 45 years old and above. The seniority contributes to the work stress of nurses [22].

It is also related to the factor of profession designation (p = 0.021, β = 0.469). The shift lead should have experience in management. The roles are infection control supervisor, equipment manager, office nurse, and quality control nurse [21]. Based on this result it meant that the profession designation was effective 0.4 times in influencing the work-stress of nurses in Yogyakarta hospital. Although, the value of OR was small, below one. Work overload is the main problem in hospitals. The problem faced by nurses is insufficient nurses, increased demand for nurses, reduced staff, and overtime [23, 24].

In Indonesia the number of red zone nurses was lacking, it can be seen in the second theme that there was only one nurse for 10 patients. The lack of nurses and overload of the nurse's role is be seen at first theme. There was a feeling of fatigue because of the lack of nurses. The lack of nurses caring for patients with Covid-19 increases the work stress of the nurses [25, 26, 27]. The member of the red zone nurses is 6 according to gender, specialty, seniority, work experience, and critical respiratory experience. The roles of nurses in the green zone are ventilator operators, coordination with green zone nurses, management of the treatment, observation, education, personal care, basic care, psychological care, and transferring patients [21].

As associate nurses who stay in the red zone, they should learn to ventilate in a limited time. It was seen from the theme "Stress because of deficit Covid-19 knowledge". Covid-19 is a new respiratory disease, so knowledge is needed to prevent and management of Covid-19 [28, 29]. Indonesian nurses' knowledge of Covid-19 is good enough and they have moderate stress [30, 31]. Moreover, they have less experience and knowledge, which increases the stress level [32, 33].

The last factor based on a qualitative study that influence the nurses' stress was hopelessness because of the worsening condition of the patients. In this condition, the nurses felt sad, hopeless, and helpless because they saw the patients getting worsen. It is coherent with another study that they felt hopeless, fearful, anxious, angry, and frustrated, and blame the government or the public [34, 35]. Furthermore, the patients die alone because of Covid-19 [35]. One of the roles of nurses is accompanying the patients, called hospice care. It provides the patients with both physical and psychological needs [36]. The respondents' majority were from Islamic hospitals. The value and beliefs of nurses were not deep in discussion.

Conclusion

The occupational stress of the nurses when the Covid-19 pandemic attacks is influenced by their age and professional designation. Moreover, improving stress is accompanied by a deficit in knowledge of Covid-19 and the worsening of patients' conditions. We suggest that the nurses should be trained consistently in emergency and critical nursing or other specific nursing care.

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