Nurses' Mental Workload in Critical Care Rooms and Emergency Department

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Abstract

Nurses who work in intensive care unit and emergency rooms have excessive workload, and they are required to carry out nursing interventions appropriately and quickly. The heavy workload has an impact on the nurse's mentality, however limited information about the nurse's mentality related to workload. The aim of the study was to identify the mental workload of nurses in intensive care and emergency rooms. Method, this research is quantitative descriptive study with total sampling technique, 63 nurses who worked in ICU, PICU / NICU, and IGD of RSUD Kota Bandung involved in this study. The research instrument was NASA-TLX (National Aeronautics and Space Administration-Task Load Index). Data were analyed using descriptive analysis in the form of frequency distribution and mean. The results showed that nurses in the emergency room (42.9%) had high mental workload, and the moderate mental workload identified in nurses who works the PICU / NICU and ICU rooms. Conclusion, critical care rooms and emergency room should consider nurses' working balance and fulfill their rest needs. Further research is needed to examine the efforts that can be made to reduce nurses' mental workload.

Keywords: Critical care, emergency department, mental workload, nurses.

Introduction

Intensive care unit is a specialist unit for patients who experience life-threatening conditions, require comprehensive services, and continuous monitoring. Critical care in nursing is a specialist expertise in the science of care that is responsible for life-threatening problems (Morton et al., 2011). Critical care services for adult patiens is usually carried out in the Intensive Care Unit (ICU), while for children called as Perinatal Intensive Care Unit (PICU), and for newborns called as Neonatal Intensive Care Unit (NICU) (Murti, 2009). In addition to intensive rooms, emergency rooms are also services that have responsibility for the life-threatening problems of patients.

Emergency patient care is a service that requires fast, prompt and careful service to prevent death or disability. Patient visits at the emergency department (ED) continue to increase each year. Increases occur around 30% in all world hospital EDDs (Bashkin et al, 2015). Data on patient visits to the ED in Indonesia were 4,402,205 patients (13.3%) of the total visits to public hospitals (Minister of Health, 2014). The responsibility of intensive nurses and emergency room nurses is quite large because it involves the safety of one's life. The nurse's workload can be seen from the condition of the patients being treated, the number of patients and nursing assignments. The condition of patients should be a stressor for intensive care nurses and also emergency room nurses. It is feared that nurses experience work stress. The results of Santoso's study (2012) found that the actions of nurses in the Intensive Care Unit which are the cause of high workloads and may have an impact on the health services provided, such as making mistake in administering the drug, or line infusion had problems. The workload of nurses is one of the important contributors to patient safety and the quality of nursing services in hospitals.

Factors that affect mental workload include demands for tasks, additional tasks and set performance targets. In addition there are individual factors, namely gender, length of work and marital status (Bos, Donders, Van der Velden, and Van der Gulden, 2013; Seker, 2014; Soleman, 2011). According to the National Nurses Association in 2006 as many as 50.9% of Indonesian nurses experienced work stress, they often felt dizzy, tired, less friendly, lacked rest due to too high workloads and inadequate income (Kasmarani, 2012). In addition, in Rosmawar (2009) Frasser stated 74% of nurses experience stress where the main causes were work environment and skills. Another researcher, Mohammad et al (2016) examined the mental workload of nurses in the Iranian ICU says that there are many obstacles that affect workload, for example the difficulty of finding a place to sit, spending a lot of time searching for equipment, delay in getting drugs, and waiting to use an equipment so that the nurse stress level increases. The activities carried out by nurses in providing nursing care are physical workloads such as bathing patients, lifting patients, tidying up beds, and other activities related to nursing care and counseling. Physical workload or the impact of high workload can be observed, however the mentally workload is difficult to share because it would involve feelings, attention and mental demands in completing the work so that the mental workload.

Research on mental workload has been carried out in emergency departments using NASA Task Load Index instruments (Susanti S, Pawennari et al., 2017). The study results showed that the mental workload on male nurses was 83.8, which is in the high category. However, no specific research has identified how the mental workload experienced by nurses in critical care rooms (ICU, NICU) and ED especially in RSUD Bandung that the number of patients in both rooms is always full. In addition, the preliminary study in a ICU room found that working in ICU is hard as patients are fully dependent on nurses, nurses have limited time for take a rest periods because they have to keep monitoring the patient's conditions. According to Ali in Yudatama & Haksama (2014) ICU nurses are required to work hard compared to nurses in other care rooms because nurses have to maintain the life-threatening patient's. Based on this background, the purpose of this study was to identify the mental workload of intensive care and emergency rooms.

Research Method

The design of this study was quantitative descriptive. The population in this study were nurses who worked in the critical care room and emergency room. The sample was selected by the total sampling method. The number of samples was 63 nurses. The instruments used in the study including the demographic data, and NASA-TLX which contained questions about the mental workload developed by Sandra G. Hart from NASA-Ames Research Center and Lowell E. Staveland from San Jose State University (1981). This questionnaire consists of six indicators, including mental demand, physical demand, temporal demand, performance, effort, and frustration level (Tarwaka, 2010). The questionnaire was valid with a value of 0.913 (Nina Euis, H Bagus Mega, Agustina F, 2011). The researcher re-conducted the validity test on 4 nurses to test the respondents' understanding in filling out the questionnaire. Data collection was carried out after obtaining permission from the Bandung Regional General Hospital. Studies conducted by researchers have passed the ethical approval of the University's Research Ethics Committee. After the data is collected, data analysis was carried out using SPSS 21. The data collection conducted on August 6 to September 2, 2018

Research Results

This section presents the result of this study.

Table 1 Nurses' Mental Workload (n=63)

Rooms	Mental Workload						Total (%)
	Heavy		Moderate		Low		
	f	%	f	%	f	%	
ED	16	25.4	10	15.9	1	1.6	42.9
PICU / NICU	10	15.9	11	17.5	0	0	33.3
ICU	7	11.1	8	12.7	0	0	23.8

Table 2 Nurses' Mental Workload Based on Contextual Factors (n=15)

Rooms	Characteristic	Mental workload						Total	
		Heavy		Moderate		Low			
		f	%	f	%	f	%	f	%
ICU	Sex								
	Male	4	66.6	2	33.4	0	0	6	40
	Female	3	33.4	6	66.6	0	0	9	60
	Age								
	< 35	5	55.5	4	44.5	0	0	9	60
	> 35	2	33.4	4	66.6	0	0	6	40
	Length of work								
	< 5 years	0	0	3	100	0	0	3	20
	> 5 years	7	58.3	5	41.7	0	0	12	80
PICU/ NICU	Sex								
	Male	2	50	2	50	0	0	4	19
	Female	8	47	9	53	0	0	17	81
	Age								
	< 35	6	50	6	50	0	0	12	57

	> 35	4	44.4	5	55.6	0	0	9	43
	Length of work								
	< 5 years	3	37.5	5	62.5	0	0	8	38
	> 5 years	7	53.8	6	46.2	0	0	13	62
IGD	Sex								
	Male	9	56.2	6	37.5	1	6.3	16	59
	Female	6	54.6	5	45.4	0	0	11	41
	Age								
	< 35	13	52	11	44	1	4	25	92
	> 35	2	100	0	0	0	0	2	8
	Length of work								
	< 5 years	9	53	7	41.2	1	5.8	17	63
	> 5 years	6	60	4	40	0	0	10	37

Table 3 Dimension of Mental Needs (KM), Business Level (TU), Time Requirement (KW), Physical Needs (KF), Performance (P), Frustration Rate (TF) Related to Mental Workload (n=63)

Indicator	Mean	Min	Max
Mental Needs (KM)	16.72	3.3	33.3
Business Level (TU)	15.68	2.6	33.3
Time requirement (KW)	12.59	3	30
Physical Needs (KF)	12.48	3.3	26.6
Performance (P)	12.25	3.3	30
Frustration Rate (TF)	10.17	2.6	33.3

Table 1 shows the respondents who work in ED have the highest mental workload (42.9%). There was one respondent who had a low mental workload in the emergency room. Table 2 shows ICU nurses who have a high mental workload, which aremale nurses at 66.6%. Nurses in the ICU who have a high mental workload are female nurses aged <35 years which is equal to 55.5% and nurses with long working years> 5 years have a high mental workload (58.3%). In the ICU, none of the nurses had a low mental workload based on the characteristics of the respondents. In the PICU / NICU room nurses who have a high mental workload are female nurses which is equal to 47.0%. age <35 years (50.0%) and work> 5 years (53.8%). In the PICU / NICU room none of the nurses had a low mental workload based on contextual factors. In the emergency room, nurses who have a high mental workload are nurses with male gender (56.2%), age <35 years old working <5 years. The three rooms have the same characteristics of nurses with heavy workload, namely men, age <35 years, and working time> 5 years.

Table 3 present that the biggest mean is the dimension of mental needs (M = 16.72). While, the smallest dimension is the dimension of frustration level (M = 10.17). This shows that the most influential dimension in the heavy mental workload of ICU, PICU / NICU, and IGD nurses is a dimension of mental needs.

Discussion

Based on the results of this study, it was found that the majority of respondents had a moderate mental workload in critical care wards including ICU, and PICU / NICU. This might be due to nurses in the critical room of the Bandung City General Hospital already accustomed and trained in providing nursing care to patients, so that they are not mentally

burdened. This research is in line with the research of Sri Wuandari (2017) stating that the results of research at the ICU / ICCU hospital experienced a moderate category of mental workloads. Service in the ICU handles various types of patients, including adult patients, children, and newborns.

Based on the characteristics of the critical care room, the critical room is a treatment room for patient with a high risk of death. The condition of patients in the critical room is a patient with a total level of dependence that requires help for all needs and is also required to interpret the client's condition, and act independently to deal with life-threatening emergencies before the doctor arrives. The research conducted by Abbey et al stated from various activities carried out by ICU nurses during the day shift, 43% of the same activities. This can cause a risk of medical errors. From the several explanations above, it can be a mental workload for ICU nurses. The type of work and length of work can also be a cause of mental workload. Every job requires mental activity or thought which is a burden for those who do it. In this case it does not disturb the work of nurses too much, but if left unchecked and not dealt with in the long term it will likely become increasingly high and can disturb the performance of nurses.

The male nurses have heavy mental workload in ICU, while in PICU / NICU room, women nurses have heavy mental workload. According to Tarwaka (2010), in general women have physical abilities or muscle strength 2/3 of men, but in certain cases women are more careful than men. Thus in order to get the appropriate work results, the division of tasks between men and women must be sought. The results of research conducted by Susanti, Pawennari, Afiah, Dahlan and Rauf (2017) in Makassar stated that the mental workload of female nurses was high. Combined physical work activities and mental work of nurses can cause a mental workload that is quite heavy and burdensome. Based on the length of work characteristics, ICU and PICU / NICU nurses have a high mental workload. This is because of nurses in RSUD Kota Bandung have worked for more than 5 years so they have experience in dealing with patients. This research is in line with the research conducted by Badi'ah (2008) in the inpatient room of RSD, the addition of Senopati Bantul, which stated that 74.6% of respondents worked> 5 years. The longer a person works, the higher the level of fatigue that leads to feelings of saturation and boredom (Setyawati, 2010).

Based on the study results, the mental workload of the emergency room nurses while working at the Bandung City Hospital showed that respondents have a high mental workload. The results of this study are in line with research conducted by Susanti, Pawennari, Afiah, Dahlan and Rauf (2017) in Makassar which showed that emergency room nurses have a high mental workload. The causes of high mental workload can be seen from the characteristics of patients in different ED rooms. In the emergency room, nurses are required to work quickly so that all patients can be served, the high number of patients, unpredictable severity, knowledge and skills, pressure and demands to save patients both morally, the demands of the hospital leadership and demands from the patient's family, and are always faced with the right decision making and high responsibility in carrying out nursing care.

The number of patient visits at the ED in Bandung City Hospital about 3200 patients in a month , it would have an impact on nurses' workload because it is related to the amount of nursing care that will be provided to each patient. A previous study revealed that influencing factors of workload were the number of clients treated / day / month / year in a health care unit, disease conditions or client dependence, and the frequency of actions needed (Gallies,1994). The mental workload faced by nurses can make nurses sometimes feel tense, and cannot overcome their own difficulties. This allows nurses to experience work stress (Kasmarani, 2012). The number of beds in the emergency room at RSUD Kota Bandung is 30 beds. The number of beds that are still limited in the inpatient room causes some patients to be treated temporarily at the ED. This causes an increase in nurses' responsibilities which will have an impact on the excess workload.

Based on the results of the mental workload on the characteristics of the emergency room nurse nurses in Bandung City Hospital,

male nurses have a high mental workload. The results of this study are in line with the research conducted by Widiastuti et al (2017) on determining the mental workload of nurses based on work shifts and gender using the national method which states that male nurses have a high mental workload. This is because male nurses are more likely to use direct contact with patients such as lifting patients, moving patients, doing first aid and providing nursing care quickly and precisely. Nurses age <35 years had heavy Mental workload especially in the emergency room. According to the Ministry of Health (2009) Age <35 years is included in the category of early adulthood. ED nurses was in the category of young adults. This research is in line with the research conducted by Prihatini (2007) on the analysis of the relationship between workload and work stress of nurses in Sidikalang Hospital which states that 53.3% of respondents with the age group <30 years. This is because most of the responsibilities carried by the emergency room nurse. The age of a person is very useful to determine the control of the type of stressor that is disturbing, so that it becomes a cause of stress.

According to the length of work chacteristic, nurses that working in the emergency room <5 years have a heavy mental workload. This study is not in line with the research conducted by Matilu et al (2014) which states that 66.7% of nurses in the ED work more than 5 years. The working period is very much related to the time of starting work, where one's work experience also determines the performance of someone. The longer the work period, the better in handling patients because they have adjusted to their jobs. According to Setyawati (2010) the longer a person works, the higher the level of fatigue, which results in a feeling of being bored and bored.

Based on the results of this study, the dimensions of mental needs found as the highest mean compared to the other 5 dimensions. This dimension of mental needs shows the mental demands needed to complete a job. The heavy mental workload experienced by most nurses is due to the large mental needs in completing his duties as a nurse. The highest mean indicates greater influence on mental workload (Hart & Staveland, 2010). This study also shows that the dimensions included in the second high category are business level dimensions. This research is in line with research conducted by Susanti, Pawennari, Afiah, Dahlan and Rauf (2017) which states that the dimensions that contribute to mental workload are the level of effort which means nurses are required mental and physical efforts in nursing services. This study also shows that the dimensions that belong to the lowest category are the dimensions of the frustration level. This shows that the level of frustration is very little contribution to the nurse's mental workload, which means that the nurse's high mental workload is not caused by the dimension of frustration. The level of frustration in question is a feeling of feeling stressed, hopeless, offended and feeling uncomfortable. According to Mubin (2004) success in stress adaptation depends on coping owned. Koping makes adaptation to stress end good or bad. Researchers assume that nurses have good stress coping. According to Amalia, Wahyuni, & Ekawati (2017) a heavy mental workload can cause stimulation of the central nervous system that can cause pain or can be said to be the emergence of disease in workers. Excessive physical workload can cause fatigue and lead to work stress (Wulandarie, 2017). If the mental workload is greater than the ability of workers, there will be a feeling of discomfort, fatigue and a decrease in work productivity. Fatigue due to psychological stress will cause disruption to the health of the nurse. Such as complaints of headache, shoulder stiffness, back pain, and body feeling unwell. How to avoid this is by fulfilling the body's calorie needs, nurses to get used to light exercise such as stretching or moving the head, hands, feet between work or at rest. Exercise can make the blood flow in the body smooth so that the mind becomes refreshed and the muscles are overcome. Besides that nurses should have the best rest time if the patient is not there and if there is time off, they can used for recreation (Sutalaksana, Anggawisastra, and Tjakaratmadja, 2006). This can be done by ICU, PICU / NICU, Bandung IGD nurses in

order to reduce their mental workload.

Conclusion

The results of this study indicate that the emergency room nurses at RSUD Kota Bandung have a high mental workload while PICU / NICU and ICU room nurses have a moderate mental workload. The characteristics of respondents in this study, including gender, age, and duration of work would be a cause of high mental workload on nurses.

The mean results in the six dimensions from the highest to the lowest are mental needs, business level, time requirements, physical needs, performance and frustration levels. Mental needs are the dimensions with the highest mean values that have a large impact on the workload of the critical space nurse mental and emergency room. This shows that most critical room nurses and emergency room hospitals in Bandung City mostly need mental activities, namely feelings, thoughts in completing their work

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